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CARPENTRY AND MASONRY CAREER LADDERS AFSCS  
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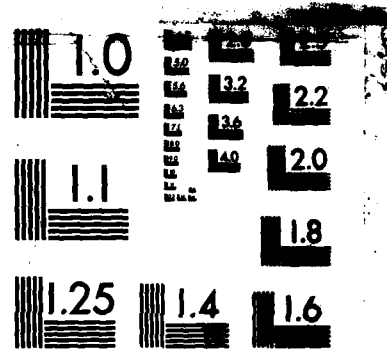
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UNITED STATES AIR FORCE

# OCCUPATIONAL SURVEY REPORT

CARPENTRY AND MASONRY CAREER LADDERS

AFSCs 552X0/552X1/55273

AFPT 90-552-513

AFPT 90-552-514

JANUARY 1985

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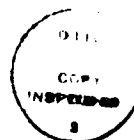
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HQ PACAF/DPAT	3		3	
HQ SAC/DPAT	3		3	
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## PREFACE

This report presents the results of an Air Force occupational survey of USAF Masonry and Carpentry (AFSCs 552X0/X1/X3) career ladders and related civilian occupational series. The report was requested by the 3700 Technical Training Wing at Sheppard AFB, Texas. Authority for conducting specialty surveys is contained in AFR 35-2. Computer products upon which this report is based are available for use by operations and training officials.

The survey instrument used in this project was developed by First Lieutenant Ronald Clontz, Inventory Development Specialist. Ms Olga Velez provided computer support for this project. Second Lieutenant H. A. Goodman analyzed the survey data and wrote the report. This report was reviewed by Major Charles D. Gorman, Chief, Airman Career Ladders Analysis Section, Occupational Analysis Branch, USAF Occupational Measurement Center.

Copies of this report are distributed to Air Staff sections, major commands, and other interested training and management personnel. Additional copies are available upon request to the USAF Occupational Measurement Center, Attention: Chief, Occupational Analysis Branch (OMY), Randolph AFB, Texas 78150-5000.

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## SUMMARY OF RESULTS

Sample. Included in the survey are three military AFSCs (552X0 Carpenters, 552X1 Masons, and 55273 Structural Technicians). There were also nine civilian series, which are listed in the INTRODUCTION. The total survey sample contained 2,189 members, which included 999 552X0s, 187 552X1s, 260 55273s, and 674 civilians.

Specialty Jobs. The following three clusters, three independent job types, and four job types were identified. Each of the jobs contains both military and civilian personnel. They are:

### Carpentry Cluster

- Building Framers Job Type
- Locksmiths Job Type
- Smart Team Personnel Job Type
- Finishings Personnel Job Type

- Shop Personnel Independent Job Type
- Roofing Personnel Independent Job Type
- Masonry Cluster
- Supervisory and Administrative Cluster
- Structure Planners Independent Job Type

DAFSC. Skill level descriptions were analyzed and little difference was found between the 3- and 5-skill level within either the Carpentry or Masonry AFSCs. Both of these AFSCs become Structural Technicians at the 7-skill level. This transition from the 3-, 5-skill technical orientation to the 7-skill supervisory orientation indicates normal career ladder progression. Although the Masonry and Carpentry AFSSs merge at the 7-skill level, the two specialties were found to be different in nearly all areas of job performance. Overlap was found only in the tool repair independent job type.

AFR 39-1 Specialty Description. The AFR 39-1 Specialty Descriptions for each of the three AFSCs were analyzed and all were found to be supporting the needs of their associated career ladders.

Training Documents. The three specialty training standards (STS) and two plans of instruction (POI) were analyzed and those supporting the Masons and Carpenters were found generally sound. The STS supporting the Structural Technicians was found to have very low percent members performing figures on matched tasks, and a review of this document was indicated.

Job Satisfaction. Overall, job satisfaction indicators for military groups were high. Since areas such as utilization of training and reenlistment intentions do not apply to civilians, civilian data were not analyzed.

7-Skill Level Merger. Survey data were not found to support a merger action at the 7-skill level, as current career ladder progression dictates.



OCCUPATIONAL SURVEY REPORT  
MASONRY AND CARPENTRY CAREER LADDERS  
(AFSCs 552X0/X1/X3)

INTRODUCTION

↙ This is a report of an occupational survey of the Masonry (AFSC 552X0), Carpentry (AFSC 552X1), and Structural Technician (AFSC 552X3) career ladders completed by the Occupational Analysis Branch, USAF Occupational Measurement Center, in October 1984. The specialty was last surveyed in July 1975. This survey was requested for training considerations which need to be assessed due to recent course revisions in which initial skill courses were reduced in both content and length. The following report will also consider the merger action which occurs between Carpenters and Masons at the 7-skill level to form the Structural Technician AFSC.

This is a joint survey which includes both military and civilian members. The request to survey civilian personnel came from the Air Force Engineering Services Center (AFESC), Tyndall AFB, Florida. In a letter dated 28 May 1982, HQ AFESC requested civilians be included in all civil engineering (CE) inventories. This inclusion of civilians is to ensure more complete task coverage, as civilian personnel may be performing some tasks not performed by their military counterparts. Only CONUS civilian personnel participated in the survey. Civilian members who completed the survey booklet did so on a voluntary basis; thus, civilian representation in some areas is not as good as military representation. ↘

Those civilians included in this study are in the following wage grade series (WGS):

- 3601 - Miscellaneous Structural and Finishing Work
- 3602 - Cement Finishing
- 3603 - Masonry
- 3605 - Plastering
- 3606 - Roofing
- 3817 - Locksmithing
- 4605 - Wood Crafting
- 4607 - Carpentry
- 4701 - Miscellaneous General Maintenance and Operations  
Work
- 4749 - Maintenance Mechanic

The applicable job grading standards for each of these series can be found in Appendix E.

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## Background

The previous OSR was completed in July 1975. Since that survey, the Technical Training School reviewed and updated its course structure and rewrote many of the training documents used at the school and in the field. Examples of these are the plan of instruction (POI) and the specialty training standard (STS). Both of these documents will be reviewed in this OSR.

As described in the AFR 39-1 Specialty Description for the three AFSs, Carpentry Specialist personnel (552X0) construct and maintain frame and fabricated structures. Masonry personnel (552X1) construct and maintain masonry and concrete structures, and Structural Technicians (55273) supervise 552X0/X1 personnel. This study will focus on the 3-, 5-, and 7-skill levels through grade E-7, Master Sergeant.

## History

The 552X0 career ladder started in 1951 under the designation "Senior Woodworker." In 1954, the name was changed to "Woodworker," and again in 1964 to "Carpentry Specialist."

The 552X1 career ladder began in March 1954 as 551X2 "Masonry and Concrete Worker." In September 1964, the AFS was renumbered 552X3 and renamed "Masonry Specialist." In April 1977, the AFS was again changed to 552X1, but the name (Masonry Specialist) remained the same.

At the 7-skill level, both the 552X0 and 552X1 career ladders merge into a supervisory tier. The AFS becomes 55273 and is titled Structural Technician. This specialty originated in May 1951 as Building Crafts Supervisor, AFS 55270. In September 1964, the name was changed to Structural Technician, but the AFS remained the same. Then, in October 1976, the AFS was changed and the new career ladder became AFS 55273, the present designation.

## SURVEY METHODOLOGY

### Inventory Development

The data collection instrument for this survey was USAF Job Inventory AFPT 90-552-513 and AFPT 90-552-514, dated September 1983. A tentative task list was prepared after reviewing pertinent career ladder publications and directives, tasks from previous survey instruments, and data from the last OSR. The task list was then evaluated in the field through personal interviews with 58 subject-matter specialists (38 military and 20 civilian) from 12 military installations. The American Federation of Government Employees (AFGE), the National Association of Government Employees (NAGE), and the National Federation of Federal Employees (NFFE) also evaluated the survey questionnaire. The resulting job inventory contained a comprehensive listing of 834 tasks under 22 duty headings, and a background section requesting such information as grade, duty title, time in present job, total time in career field, and job satisfaction data.

### Data Collection

From October 1983 to March 1984, consolidated base personnel offices (CBPO) in operational units worldwide administered the inventory to personnel holding the Carpentry and Masonry AFSSs. Inventories for civilian personnel were sent directly to their organizations. Military participants were selected from a computer-generated mailing list obtained from personnel data tapes maintained by the Air Force Human Resources Laboratory (AFHRL). Civilian personnel were selected from a list supplied by the Office of Civilian Personnel Operations.

Each individual who was administered the inventory first completed an identification and biographical information section and then checked each task performed in their current job. The participants then rated the tasks checked on a 9-point scale, showing the relative time spent on that task as compared to all other tasks. The time spent ratings were measured on a scale which supplied the respondent with nine choices, as follows:

1. Very small amount
2. Much below average
3. Below average
4. Slightly below average
5. About average
6. Slightly above average
7. Above average
8. Much above average
9. Very large amount

Time spent is a relative measure of how much time individuals perceive themselves to spend on each task, as compared to all other tasks checked in the survey. To calculate time spent, all of an incumbent's ratings are assumed to account for 100 percent of his or her time spent on the job. The rating for each task is divided by the sum of all ratings, then multiplied by 100 to provide a relative percentage of time for each task. This procedure provides a basis for comparing tasks in terms of both percent members performing (where a task is checked by an incumbent) and relative time spent (based on the calculations from the 1-9 scale).

### Survey Sample

Personnel who participated in the survey were carefully selected to ensure an accurate representation across major commands (MAJCOM), Air Force specialties (AFS), military paygrade, and civilian wage grade (WG) groups. Eligible DAFSC 552X0/X1/X3 (only those military personnel who had been working in their present job for at least 6 weeks were considered eligible) and WG 3601/2/3/5/6, 3817, 4605/07, and 4701/49 personnel were mailed survey booklets. Table 1 reflects the percentage, by MAJCOM, of military personnel in the 552XX AFS as of December 1983. Also listed in Table 1 is the percentage distribution, by MAJCOM, of respondents in the survey. Table 1A displays civilian representation. Table 2 reflects paygrade distributions for military members. Table 3 displays survey representation by total active federal military service (TAFMS) groups. Table 2 shows 93 percent of assigned 55273 personnel are in paygrades E-6/E-7, yet they comprise only 62 percent of the E-6/E-7 survey sample. Table 1 shows that 100 percent of those 55273's eligible to be surveyed, responded. Therefore, one would expect that 93 percent of those respondents should be at the E-6/E-7 paygrade. However, such was not the case. There are several factors that may cause an unexpected difference in the percent assigned vs percent surveyed. For instance, this difference may be attributed to changes over time, since assigned figures were collected in September 1983 and the field survey was not closed until August 1984. These differences in the assigned vs sampled figures have no effect on survey data since the number of respondents at any specific paygrade, skill level, or any other variable will be the same regardless of the assigned figures, given that 100 percent of the eligible 55273 personnel responded.

TABLE 1

## COMMAND REPRESENTATION OF 552XX SURVEY SAMPLE

COMMAND	552X0		552X1		55273	
	PERCENT OF ASSIGNED	PERCENT OF SAMPLE	PERCENT OF ASSIGNED	PERCENT OF SAMPLE	PERCENT OF ASSIGNED	PERCENT OF SAMPLE
C	4	3	3	4	4	6
LC	10	10	7	7	7	6
SC	4	4	7	5	5	4
C	7	7	7	8	9	7
C	13	13	14	15	13	14
CAF	11	12	7	5	10	11
C	21	20	24	21	21	19
C	18	18	14	14	16	17
AFE	10	10	14	16	11	9
HER	<u>2</u>	<u>3</u>	<u>3</u>	<u>5</u>	<u>4</u>	<u>7</u>
TOTAL	100	100	100	100	100	100

Total 552X0 Personnel Assigned: 1,767  
 Total 552X0 Eligible for Survey: 1,368  
 Total 552X0 Surveyed: 999  
 Percent of 552X0 Assigned Surveyed: 57%  
 Percent of 552X0 Eligible Surveyed: 73%

Total 552X1 Personnel Assigned: 393  
 Total 552X1 Eligible for Survey: 312  
 Total 552X1 Surveyed: 187  
 Percent of 552X1 Assigned Surveyed: 43%  
 Percent of 552X1 Eligible Surveyed: 60%

Total 55273 Personnel Assigned: 313  
 Total 55273 Eligible for Survey: 257  
 Total 55273 Surveyed: 260  
 Percent of 55273 Assigned Surveyed: 83%  
 Percent of 55273 Eligible Surveyed: 100%

TABLE 1A

## CIVILIANS ASSIGNED/SURVEYED

	<u>3601</u>	<u>3602</u>	<u>3603</u>	<u>3605</u>	<u>3606</u>	<u>3817</u>	<u>4605</u>	<u>4607</u>	<u>4701</u>	<u>4749</u>
NUMBER AVAILABLE SURVEY:	2	7	107	23	67	67	86	647	4	102
NUMBER SURVEYED:	0	1	79	4	35	36	59	390	2	40
PERCENT OF AVAILABLE SURVEYED:	0	14%	74%	17%	52%	54%	69%	60%	50%	39%

total Assigned: 2,534

total Surveys Mailed: 1,044

total Surveys Returned: 674

percent of Assigned Surveyed: 27%

percent of Mailed Returned: 65%

TABLE 4

SELECTED BACKGROUND DATA FOR MILITARY MEMBERS  
OF SPECIALTY GROUP CLUSTERS

	<u>CARPENTRY</u>	<u>MASONRY</u>	<u>SUPERVISORY AND ADMINISTRATIVE CLUSTER</u>
NUMBER IN GROUP	1,245	313	195
PERCENT OF SAMPLE	57%	14%	9%
PERCENT IN CONUS	82%	73%	73%
<hr/> DAFSC DISTRIBUTION:			
55230	14%	4%	1%
55250	46%	7%	13%
55231	*	8%	0
55251	*	44%	3%
55273	8%	10%	54%
CIVILIAN	68%	27%	29%
<hr/>			
AVERAGE GRADE (MILITARY)	E-4	E-4	E-4
AVERAGE MILITARY T1CF (MOS)	67	65	135
AVERAGE TAFMS (MOS)	60	68	161
PERCENT IN FIRST ENLISTMENT	41%	49%	1%
AVERAGE NUMBER OF TASKS PERFORMED	143	192	82
JOB DIFFICULTY INDEX (JDI)	13	16	13

\* Equals less than 1 percent

Table 9 displays the number and percentage of military members at each paygrade (E-1 through E-3 combined) by cluster, job type, and independent job type. As the table shows, the Carpentry cluster is the largest with 592 members. This cluster also has the largest number of airmen at paygrade E-3 or below (245 or 41 percent of the total group). The Roofing Personnel independent job type has the smallest military membership (9), with nearly half being in their first enlistment.

As stated earlier in this section, it is also important to consider the military-civilian mix for each specialty group. Table 6 shows the number of military and civilians in each of the specialty groups. Notice from the table that the greatest number of civilians are found in the Carpentry cluster (386) and in the Building Framers job type (142), while the group with the greatest percentage of civilians is found in the Roofing Personnel independent job type (74 percent). Locksmiths have a 50/50 split and is the only group to show no imbalance between military and civilian members.

### Summary

Great diversity was found between the identified specialty groups. Almost no overlap was noted between Carpentry and Masonry Personnel, with the exception of Shop Personnel, and here overlap was found as a function of those tasks common to tool maintenance and repair, rather than carpentry- or masonry-related tasks.

There was a large degree of task similarity found within specialty groups, especially the Masonry and Supervisory and Administrative clusters. As a result of the large core of common tasks within these clusters, no job types were identified in them, though some variations in jobs were noted.

The military-civilian mix was considered for each specialty group, as well as several other background variables, and differences in these areas were cited. The greatest percentage of 7-skill level personnel (AFSC 55273) was found in the Structural Planners independent job type (68 percent). The greatest percentage of civilians was found in the Roofing job type (74 percent). All selected background data can be found in Tables 4, 5, 7, 8, and 9.

In the following sections, the three AFSCs (552X0, 552X1, and 55273) will each be discussed separately.



have 46 percent performing. After a careful task by task analysis was performed on civilian and military members in each specialty group, the findings showed that no tasks were performed by civilian members that were not performed by military counterparts. This is an important finding since it indicates military members are able to gain experience in the full range of tasks relating to their specific specialty job area. These findings, which show no task differences between military and civilian members, were also the findings of a previous survey. The survey was completed by the Air Force Human Resources Laboratory in December 1977, and was titled "Comparative Occupational Survey of USAF Civilian and Military Members in Three Civil Engineering Specialties." This AFHRL report found military and civilian task performance to be approximately equal, with the only difference being in the percent members performing the tasks. Again, this coincides with current data presented in this occupational survey report.

### Comparison of Specialty Job Groups

Specialty job groups were compared in terms of background information and civilian-military group membership. These data are useful as a means of comparing specialty jobs beyond those task differences which separate them.

Table 4 contains selected background information by specialty group clusters, while Table 5 displays this same data for job types. One of the more interesting items in both these tables is the difference in total months of service between military and civilian members who are found within the same specialty job or cluster. Civilian members tend to have been in Government service for a much longer period of time than military counterparts. While this finding was not unexpected, the extent of this difference was. For instance, in Table 5 under Finishings Personnel, the average TAFMS is 56 months. Under this same job type, the average length of Civilian Total Federal Service (CTFS) is 215 months--almost four times that of the military. In the cluster description (Table 4), we find that both Carpentry and Masonry cluster members have almost three times the total months of service as military group members. The only change from this trend is in the Structural Planners independent job type where TAFMS is 137 against CTFS of 81. Table 8 lists TAFM: group membership for each of the specialty jobs.

Table 5 also shows that the Structural Planners job type is the most senior, with an average paygrade of E-5 and 68 percent who are at the 7-skill level. SMART Personnel performed the highest average number of tasks of any job type (170), while Masonry cluster personnel performed the highest number of any cluster (192). The high number of tasks performed by Masonry cluster personnel attests to the small amount of time that can be spent on any one task, as opposed to other specialty jobs in the study.

The job difficulty index (JDI), which was explained in the Task Factor Administration section, is displayed in Tables 4 and 5 on each specialty job. The highest JDI for any job type or independent job type was the Building Framers, who had a JDI of 18. Finishings Personnel had the lowest JDI (7) and the Masonry specialty group had the highest of the three clusters (16).

- prepare or review unit emergency or disaster plans
- play layout of facilities
- supervise civilians
- write civilian performance ratings
- develop or improve work methods or procedures
- conduct hiring interviews
- indorse airman performance reports
- identify or report safety hazards
- evaluate accident reports
- plan security programs
- plan safety programs
- establish work schedules

VI. STRUCTURAL PLANNERS (GRP072, N=69). Members of this independent job type are mostly military (of the 69 people in the group, only 2 are civilian) and have an average paygrade of E-5. Personnel perform tasks associated with preparing plans for masonry or carpentry projects and planning construction layouts. They are also responsible for estimating costs involved with assigned projects, determining the methods which will be utilized on the project by technical personnel, and ensuring compliance with required standards. Military members are mostly in DAFSC 55273 and the civilians are in Series 4607. Typical tasks performed by this group are as follows:

- estimate quantity of materials required for masonry projects
- estimate quantity of materials required for carpentry projects
- plan projects or lay out materials from verbal instructions
- establish types of material required for masonry projects
- read or interpret masonry construction drawings
- determine cement strength requirements
- sketch working drawings
- read or interpret carpentry construction drawings
- coordinate with project requester on site planning
- evaluate compliance with work standards
- determine size of aggregate used in concrete mixes

#### Military-Civilian Group Task Comparison

One major reason for this study was to determine whether civilian members were performing tasks which were not being performed by their military counterparts. Using the specialty groups described in this section, a comparison was performed between civilian and military members within each group. These comparisons were based on task performance at any level. For instance, it is more important to find that both groups utilize a task than to note that military members have 60 percent performing and civilian members

standard bricks in erecting walls and fences, and in repairing damage on deteriorated brickwork. It is important to remember that brick masons still perform all those tasks which describe the cluster as a whole, but spend more time on brickwork tasks as compared to the amount of time spent on all other tasks related to the field. Examples of those tasks on which more time is spent by this variation are:

- check level of block, brick, or structural tile construction using strings
- plumb block, brick, or structural tile walls
- spread mortar for blocks, bricks, or structural tiles
- repoint block or brick mortar joints
- reseal block or brick mortar joints
- clean and roughen footings prior to laying blocks or bricks
- lay block or brick walls using corner blocks and line

The other variation found in this cluster was in the area of stucco maintenance and repair. Stucco is an exterior finish applied to outside walls in place of some other form of exterior siding. To perform this task, knowledge is required in both the mixing and application methods for the product. Typical tasks which best describe this variation include:

- calculate ratio mixture for stucco
- remove loose stucco
- apply finish coat to stucco walls
- apply brown coat for stucco walls
- inspect plaster or stucco surfaces for damage
- install control joints for plaster or stucco walls
- set up base screeds for plaster or stucco
- mix stucco using mortar mixer

Like the first variation, personnel who spend slightly more time on stucco still perform all those core tasks common to Masonry cluster personnel.

V. SUPERVISORY AND ADMINISTRATIVE PERSONNEL (GRP104, N=195). This cluster contains 55 civilians (28 percent of cluster) who are mostly in Series 4607 (Carpenter) and 4749 (Maintenance Mechanic), and 140 military members (72 percent of cluster) who are primarily in DAFSC 55273. The cluster contains purely managerial personnel who perform such functions as evaluating plans and procedures, estimating costs and manpower needs, designing and implementing safety programs, and are involved in most aspects of training. Few technical tasks are performed at this level. Typical tasks associated with this cluster are:

Civilians found in this group are almost entirely in Series 3606 (Roofer) and military members are in DAFSC 552X0. Twenty-eight (78 percent) of the 38 group members are civilian. On the average, Roofers perform 49 tasks, examples of which have already been listed, and average military paygrade for this group is E-3.

IV. MASONRY PERSONNEL (GRP067, N=313). Due to the large common core of tasks being performed by all members of the Masonry cluster (50 percent of their job time is spent on an average of 95 tasks) and the lack of specialized tasks above this large common core, there were no job types found within the cluster. Some job variations were found, but the overall cluster description will be discussed first.

Masonry Personnel work with bricks, concrete, cement, mortar, stucco, tile, and plaster in the construction, maintenance, and repair of structural units and in finishing work. Masons do anything from replacing broken ceramic tiles to pouring and leveling concrete forms and foundations. The Mason must be an expert in many areas, such as in mixing materials to ensure the strongest concrete or cement for the environment, and in applying mosaic and ceramic tiles, as well as ceramic sinks and other plumbing fixtures.

Of the 313 people in the cluster, 84 are civilian, with the majority of the civilians being in Series 3603 (Mason) and a small number in Series 3602 (Cement Finisher) and Series 3605 (Plasterer). Military personnel are almost entirely in DAFSC 552X1. The following is a list of tasks performed by Masonry Personnel:

- mix mortar using mortar mixer
- drill holes in concrete with hand drills
- calculate ratio mixture for plaster coating
- patch or repair concrete using epoxy fillers
- prepare grout for quarry tiles
- calculate ratio mixture for mortar
- float concrete
- cut blocks, bricks, or structural tiles
- calculate ratio mixture for stucco
- apply sealant to block or brick construction
- mix plaster by hand for rough coat
- reseal block or brick mortar joints
- install spacers or supports
- calculate ratio mixture for concrete
- patch or repair concrete using cement

Two variations to the general cluster were noted, although personnel who spend job time on tasks associated with the variations did not group together and, thus, did not form a separate job type. The first variation was found among brick masons. Brick masons work with concrete block or

- apply protective coatings, such as varnish, paint, or stain to exposed exterior wood surfaces
- cut plexiglass to specific dimensions
- repair hardwood flooring
- install or replace venetian blinds
- install or replace screens on wood door or window frames
- install or replace tongue and groove flooring
- install or replace linoleum floor covering
- remove or replace closet shelves or rods
- install or replace suspended ceilings
- caulk areas such as windows, sinks, or bathtubs

II. SHOP PERSONNEL (GRP097, N=69). The primary job of Shop Personnel is to maintain and repair a variety of tools and equipment, although they also design and construct various shelving and storage units. This independent job type did not group under either the Carpentry or Masonry cluster because it is responsible for maintenance of tools from both groups. Civilian members are either in Series 4605 or 4607 and comprise nearly half (32) of the 69 members. Military members from AFSCs 552X0 and X1 and 55273 can all be found in the group. On the average, Shop Personnel perform 68 tasks, such as:

- inspect hand tools
- clean hand tools
- clean portable power tools
- adjust shop power equipment
- lubricate hand tools
- remove or replace parts on hand tools
- sharpen portable power tools
- remove or replace parts on shop power equipment
- construct wall or corner shelves
- construct chairs or benches

III. ROOFING PERSONNEL (GRP105, N=38). This independent job type is unusual in that 50 percent of the group members job time is spent performing only 17 tasks. These 17 tasks are almost entirely roofing-related and fall under Duty J, Installing and Maintaining Interior and Exterior Finishings. Examples of these tasks are:

- patch built-up roofing by hot method
- overlay asphalt roofing shingles
- patch built-up roofing by cold method
- overlay rolled roofing
- remove scaffolding
- install or replace slate roofing
- install or replace asbestos cement shingles on exterior walls

- adjust panic hardware
- lubricate padlocks
- change cipher lock combinations
- design master key systems
- replace safe door latches
- hand file keys
- repin vehicle locks
- service Folger-Adams locks
- clean locks
- install or replace door locks

C. Structural Maintenance and Repair Team (SMART) Personnel (GRP293, N=88). Structural Maintenance and Repair Team (SMART) Personnel perform a wide variety of tasks on previously completed structures. They can be found repairing building components, such as doors, windows, floors, and various electrical and plumbing fixtures. Twenty of the 88 members in this group are civilians and are mostly in Series 4607 (Carpenter) and 4749 (Maintenance Mechanic). The 69 military members are mostly 55250 personnel, with an average paygrade of E-5. Group members perform an average of 170 tasks, with 91 of those tasks accounting for over 50 percent of their job time. Some examples of tasks performed by SMART group members are:

- install or replace insulation vapor barriers
- install or replace door closers
- install or replace door or wall louvers
- repair hardwood flooring
- install or replace wooden drop siding
- install or replace venetian blinds
- paint facilities or equipment
- install or replace swinging doors
- lubricate padlocks
- read or interpret carpentry construction drawings

D. Interior and Exterior Finishings Personnel (GRP114, N=146). When a structure is constructed or remodeled, it requires that finishing touches be performed before the structure can be called completed. These finishing touches include such tasks as replacing or installing tile and hardwood floors and painting, staining, or varnishing interior and exterior finishes. This finishing work is the primary job of members who are in the Interior and Exterior Finishings Personnel group.

Only 16 of the 146 group members are civilian--14 in Series 4607 and 2 in Series 4749. Military group members are in Duty AFSC 552X0 and have an average paygrade of E-4. Finishers perform an average of 40 tasks. Some examples of those tasks are:

Building Framers perform mostly new work, rather than maintaining previously completed structures. Typically, they will construct box sills; lay subflooring; erect scaffolding; and lay out, cut, and install rafters and beams. While framing and construction is the largest part of the job, Framers also perform many finishing tasks, such as installing or replacing doors, door jambs, and handrails or balusters. On the average, Building Framers perform 233 tasks, which is the largest average number of tasks performed by any of the identified groups. The average military paygrade of members in this job type is E-4 (Sergeant). Examples of typical tasks performed are:

- erect exterior walls
- construct rough sills
- layout or cut door or window units
- construct interior partitions
- layout or cut hip rafters
- layout or cut cornices
- construct headers and cripples
- construct batten doors
- install or replace gussets
- layout or cut floor joists

B. Locksmiths (GRP492 and GRP070, N=111). This group accounts for 5 percent of the total survey sample. Members perform an average of 226 tasks, with 40 tasks accounting for 50 percent of their job time. Unlike any of the other job types in the survey, this one consists of two different groups. The first (GRP492) has 29 members and is 66 percent military and 34 percent civilian. The second (GRP070) has 82 members and is 100 percent civilian. The top 40 tasks, performed by each of the two groups, are related to installing and maintaining locking devices. Group 070, however, performs many of those tasks listed in Table 7 which form the common core of tasks for the cluster. Personnel in Group 492 do not share this common core of carpentry tasks, but are highly specialized in all of those tasks which relate to locksmithing. It is the locksmithing tasks that caused the two groups to form a single job type, and it is the fact that members of Group 492 perform carpentry tasks that caused them to separate in the computer products. The differences appear to be a function of the military and civilian mix. Military members perform an average of 178 tasks, while civilian members perform an average of 74.

The two groups were combined in a special computer product (Job Special 501) which yielded the overall job type characteristics. Locksmiths install, maintain, repair, and replace a wide variety of locking and security devices. More than just the standard key-lock units, they work on cipher and combination locks, as well as electronic and magnetic locking systems. Other than the locking devices maintained by this group, they are also responsible for repair of drawer tracks and rollers, key duplicating, door hinge installation and replacement, lock picking, and installation of door jambs or stops. Examples of tasks performed by Locksmiths are:

IV. MASONRY PERSONNEL (GRP067, N=313)

V. SUPERVISORY AND ADMINISTRATIVE PERSONNEL (GRP104, N=195)

VI. STRUCTURAL PLANNERS (GRP072, N=69)

These 10 groups represent 88 percent of the total survey sample. The other 12 percent represent members who do not share a large enough core of tasks to be associated with any specialty group, and who do not group together.

### Job Group Descriptions

The following paragraphs contain job descriptions for the clusters, job types, and independent job types identified in the analysis. Included in each description, and in Tables 4 and 5, is information regarding the military and civilian population of the group. It is important to note the military/civilian mix in each specialty job description, as this may have a bearing on the characteristics of the group as a whole. Selected background and job satisfaction data are also provided and discussed for each of the specialty jobs. (Tables displaying selected background data for each group are provided in Appendix A.)

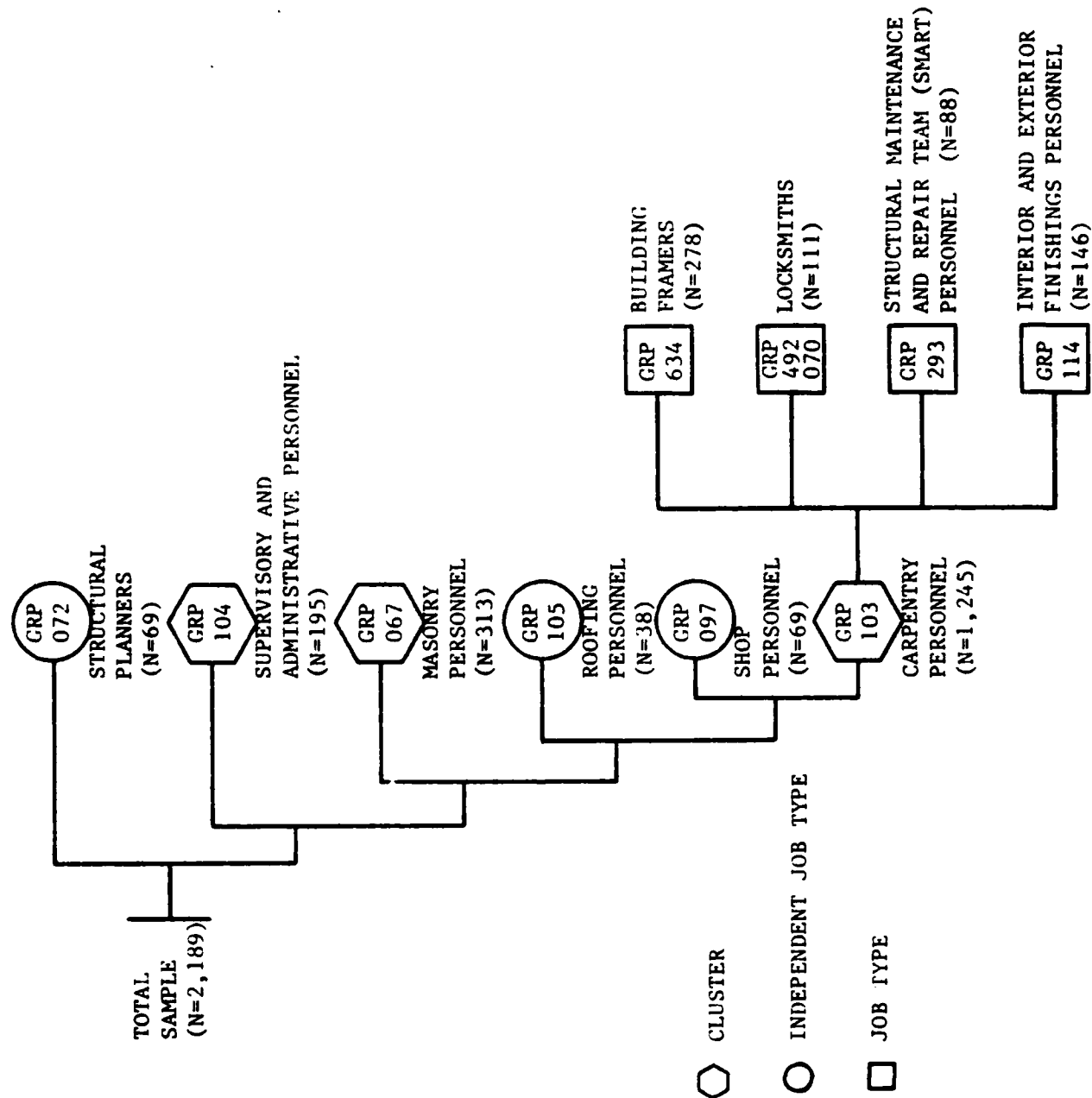
I. CARPENTRY PERSONNEL (GRP103, N=1,245). This cluster consists of 4 job types and represents the largest group in the survey (1,245 members and 57 percent of the total sample). The military and civilian population for the cluster, and for each job type within the cluster, is displayed in Table 6. There seems to be a good mix of military and civilian members, with the exception of Finishings Personnel where 89 percent of the job type is military. The cluster, as a whole, is 69 percent military and 31 percent civilian.

Carpenters share a large core of common tasks which are related mostly to building maintenance and repair, cabinet and shelving construction, and maintaining tools and equipment. Table 7 lists examples of tasks by percent members performing in the cluster. The commonality of tasks across the four job types and the high percent members performing makes the tasks useful in describing the cluster as a whole. The job types identified within this cluster, and outlined in the "Overview," will each be discussed separately in the following paragraphs.

A. Building Framers (GRP634, N=278). This job type consists of 50 percent military and 50 percent civilian members. Civilians found within the group are mostly from WG Series 4605 (Woodcrafting) and 4607 (Carpentry). Military personnel are predominantly in AFSC 552X0; however, seven AFSC 55273 members were performing a large enough number of technical tasks associated with the job type to cause them to be included.



FIGURE 1  
CAREER LADDER STRUCTURE  
(AFSCs 553X0/X1/X3)



## SPECIALTY JOBS (Career Ladder Structure)

The structure of military carpenters and masons and related civilian series was determined on the basis of similarity of tasks performed by incumbents in the respective fields. Each person in the study performs a subset of tasks. When matched with other people who perform the same or similar tasks, they group together to form a job type. Job types which have a high degree of similarity are grouped into a cluster. Those specialized jobs found to be too dissimilar to fit within a cluster are labeled independent job types.

### Overview of Specialty Jobs

Three clusters, one which includes four job types, and three independent job types were identified by a structured analysis of the survey data. A structured analysis is a process which compares variables (such as percent members performing and time spent on tasks) to determine similarities and differences among groups. Figure 1 displays these 10 groupings and how they relate to each other. The 10 groups are listed below by title; group number (GRP), which is provided as a reference to computer-printed information; and the number (N) of personnel in each group. Listed under the Carpentry cluster are the four job types. Although job variations were found within the Masonry cluster, no distinct job types were identified (this is a function of the large core of common tasks performed by members of the cluster). The variations will be discussed in the cluster narrative. There were also no distinct job types found in the Supervisory and Administrative cluster; again, probably due to the large core of common tasks performed by group members.

One job type (Locksmiths) found within the Carpentry cluster contains two groups which were combined in a special computer product to form the job type. The reason for this is explained in the Locksmiths' narrative in this section.

Names, group identifiers (GRP), and group size (N) for the identified clusters, job types, and independent job types are:

- I. CARPENTRY PERSONNEL (GRP103, N=1,245)
  - A. Building Framers (GRP634, N=278)
  - B. Locksmiths (GRP492 and GRP070, N=111)
  - C. Structural Maintenance and Repair Team (SMART) Personnel (GRP293, N=88)
  - D. Interior and Exterior Finishings Personnel (GRP114, N=146)
- II. SHOP PERSONNEL (GRP097, N=69)
- III. ROOFING PERSONNEL (GRP105, N=38)

## Task Factor Administration

In addition to completing a job inventory, selected senior NCOs (AFSC 55273) were also asked to complete a second booklet for either training emphasis (TE) or task difficulty (TD). TE and TD booklets are processed separately from job inventories. Rating information obtained from these booklets is used in several analyses discussed in detail within this report.

Task Difficulty (TD). Each person completing a TD booklet was asked to rate all inventory tasks, of which they had knowledge, on a 9-point scale (from extremely low difficulty to extremely high difficulty) to obtain a relative measure of the difficulty of the rated task as compared with all other rated tasks in the inventory. Difficulty is defined as the length of time required by an average member to learn to do the task. TD data were independently collected from 47 senior military personnel in AFS 55273 stationed worldwide. Interrater reliability (as assessed through components of variance of standard group means) was .93, which statistically indicates excellent agreement among the raters. Ratings were adjusted so tasks of average difficulty have ratings of 5.00 and a standard deviation of 1.00. The resulting data is essentially a rank ordering of tasks indicating the degree of difficulty for each task in the inventory.

Job Difficulty Index (JDI). After the data obtained from the raters on TD is processed, it is possible to also compute a job difficulty index (JDI). An equation using the number of tasks performed and the average difficulty per unit time spent (ADPUTS) is the basis for calculating the JDI. In this equation, the more time a group spends on difficult tasks, or the more tasks they perform, the higher the JDI. The index ranges from 1.0 for very easy jobs to 25.0 for very difficult jobs. The indices are adjusted so the average JDI is 13.00. This index is used to analyze the relative variation in the difficulty of the jobs within the specialty and in identifying possible utilization problems or possible causes of group dissatisfaction.

Training Emphasis (TE). Fifty-eight senior technicians (55273) completing TE booklets rated tasks on a 10-point scale, with the lowest rating (0) being "extremely low training emphasis," to 5, "average training emphasis," to 10, "extremely high training emphasis." TE is defined as a rating of the degree of relative emphasis the rater feels should be assigned to the training of certain tasks. The interrater reliability for carpentry tasks (as assessed through components of variance of standard group means) for all 58 raters surveyed was .96. This figure (like the TD rating) indicates excellent agreement among the raters as to which tasks required some form of structured training and which did not. The average TE rating was 3.85. This high level of interrater reliability, however, was not reached for those tasks relating to the masonry AFSC. Low levels of agreement among raters made the data unacceptable for use in the area of masonry training.

TD and JDI data will be used later in this report in the analysis of training programs for the 552XX AFS and in examining the various types of jobs performed by Carpentry and Masonry personnel. TE data will only be used in the analysis of carpentry-related tasks.

TABLE 2  
PAYGRADE REPRESENTATION OF MILITARY SURVEY SAMPLE

PAYGRADE	552X0		552X1		55273	
	PERCENT OF ASSIGNED	PERCENT OF SAMPLE	PERCENT OF ASSIGNED	PERCENT OF SAMPLE	PERCENT OF ASSIGNED	PERCENT OF SAMPLE
E-2/E-3	37	42	30	36	0	0
E-4	32	33	33	30	0	0
E-5	25	22	30	29	7	37
E-6/E-7	<u>3</u>	<u>3</u>	<u>6</u>	<u>4</u>	<u>93</u>	<u>62</u>
TOTAL	99*	100	100	99*	100	99*

\* Due to rounding

TABLE 3  
TOTAL ACTIVE FEDERAL MILITARY SERVICE (TAFMS) GROUPS

TAFMS	552X0		552X1		55273	
	PERCENT OF ASSIGNED	PERCENT OF SAMPLE	PERCENT OF ASSIGNED	PERCENT OF SAMPLE	PERCENT OF ASSIGNED	PERCENT OF SAMPLE
1-48	59	51	49	52	*	*
49-96	24	24	25	24	3	14
97+	<u>17</u>	<u>25</u>	<u>26</u>	<u>24</u>	<u>97</u>	<u>86</u>
TOTAL	100	100	100	100	100	100

\* Equals less than 1 percent

TABLE 5

## SELECTED BACKGROUND DATA FOR SPECIALTY GROUP JOB TYPES AND INDEPENDENT JOB TYPES

	CARPENTRY JOB TYPE GROUPS						
	BUILDING FRAMERS	LOCKSMITHS	SMART TEAMS	FINISHINGS	SHOP PERSONNEL	ROOFING PERSONNEL	STRUCTURAL PLANNERS
NUMBER IN GROUP	278	111	88	146	69	38	69
PERCENT OF SAMPLE	13%	5%	4%	7%	3%	2%	3%
PERCENT IN CONUS	87%	90%	78%	76%	84%	95%	74%
DAFSC DISTRIBUTION:							
55230	5%	4%	0	19%	10%	5%	1%
55250	37%	20%	43%	60%	28%	18%	32%
55231	0	0	0	*	1%	0	0
55251	0	0	0	0	0	0	0
55273	5%	6%	34%	8%	13%	3%	68%
AVG MILITARY PAYGRADE							
AVG MILITARY T1CF (MOS)	E-4	E-4	E-5	E-4	E-4	E-3	E-5
AVERAGE TAFMS (MOS)	86	88	105	49	91	72	122
AVG CTFS (MOS)**	60	79	118	56	88	69	137
PERCENT IN FIRST ENLISTMENT	153	132	141	215	173	112	81
AVG NUMBER TASKS PERFORMED	29%	24%	16%	67%	33%	34%	4%
JOB DIFFICULTY INDEX (JDI)	234	101	170	46	68	49	31
	18	17	16	7	9	8	9

\* Equals less than 1 percent

\*\* Civilian Total Federal Service (CTFS)

TABLE 6

## MILITARY AND CIVILIAN GROUP MEMBERSHIP OF CLUSTERS, JOB TYPES, AND INDEPENDENT JOB TYPES

<u>GROUP DESCRIPTION</u>	<u>NUMBER OF MILITARY</u>	<u>PERCENT MILITARY</u>	<u>NUMBER OF CIVILIAN</u>	<u>PERCENT CIVILIAN</u>	<u>NUMBER TOTALS</u>	<u>PERCENT TOTALS</u>
CARPENTRY PERSONNEL	859	69%	386	31%	1,245	100%
*BUILDING FRAMERS	136	49%	142	51%	278	100%
*LOCKSMITHS	56	50%	55	50%	111	100%
*SMART PERSONNEL	68	77%	20	23%	88	100%
*INTERIOR AND EXTERIOR FINISHINGS PERSONNEL	130	89%	16	11%	146	100%
SHOP PERSONNEL	37	54%	32	46%	69	100%
ROOFING PERSONNEL	10	26%	28	74%	38	100%
MASONRY PERSONNEL	229	74%	84	27%	313	100%
SUPERVISORY AND ADMINISTRATIVE PERSONNEL	140	72%	55	28%	195	100%
STRUCTURAL PLANNERS	67	97%	2	3%	69	100%

\* Job Types within the Carpentry Cluster

TABLE 7

## REPRESENTATIVE TASKS COMMON TO THE CARPENTRY CLUSTER AND JOB TYPES

TASKS	PERCENT MEMBERS PERFORMING				
	CARPENTRY CLUSTER	BUILDING FRAMERS	LOCKSMITHS	SMART TEAM	INTERIOR AND EXTERIOR FINISHINGS PERSONNEL
INSTALL OR REPLACE DOOR JAMBS OR STOPS	96	99	50	98	89
INSTALL OR REPLACE DOOR HINGES	91	95	57	94	83
INSTALL OR REPLACE DOOR OR WALL LOUVERS	91	99	43	93	73
CLEAN PORTABLE POWER TOOLS	90	89	77	97	75
INSTALL OR REPLACE INSULATION VAPOR BARRIERS	90	97	38	90	69
CUT PLEXI-GLASS TO SPECIFIC DIMENSIONS	87	94	36	90	78
ERECT METAL SCAFFOLDING	87	97	36	91	76
INSTALL OR REPLACE ASPHALT ROOFING SHINGLES	86	95	31	89	68
SHARPEN PORTABLE POWER TOOLS	86	88	77	94	74
INSTALL OR REPLACE SWINGING DOORS	85	95	30	78	65
INSTALL OR REPLACE DOOR CLOSERS	84	90	53	89	68
ERECT EXTERIOR WALLS	83	98	27	68	47
INSTALL OR REPLACE DOUBLE TOP PLATES	81	96	32	69	45
INSTALL OR REPLACE SUB-FLOORS	77	97	25	61	94
REPAIR HARDWOOD FLOORING	76	91	33	70	58

TABLE 8

## COMPARISON OF MILITARY TAFMS GROUPS WITHIN SPECIALTY JOBS

GROUP	NUMBER OF MEMBERS			PERCENT OF MEMBERS		
	1-48	49-96	97+	1-48	49-96	97+
CARPENTRY PERSONNEL	353	144	110	58	24	18
BUILDING FRAMERS	40	18	10	59	26	15
LOCKSMITHS	13	6	11	43	20	37
SMART PERSONNEL	4	20	29	8	38	55
INTERIOR AND EXTERIOR FINISHINGS PERSONNEL	72	27	19	61	23	16
SHOP PERSONNEL	7	4	8	37	21	42
ROOFING PERSONNEL	2	0	1	67	0	33
MASONRY PERSONNEL	82	44	47	47	25	27
SUPERVISORY AND ADMINISTRATIVE PERSONNEL	1	7	81	1	8	91
STRUCTURAL PLANNERS	3	16	41	5	27	68
						100

\* Does not equal 100 percent due to rounding



TABLE 9

## COMPARISON OF MILITARY PAYGRADE GROUPS WITHIN SPECIALTY JOBS

GROUP	NUMBER IN GROUP					TOTAL	PERCENTAGE IN GROUP					TOTAL
	AIRMAN	E-4	E-5	E-6	E-7		AIRMAN	E-4	E-5	E-6	E-7	
CARPENTRY PERSONNEL	245	174	140	27	6	592	41	29	24	5	1	100
*BUILDING FRAMERS	27	20	17	2	1	67	40	30	25	3	2	100
*LOCKSMITHS	11	21	22	5	4	63	18	33	35	8	6	100
*SMART PERSONNEL	0	7	29	13	3	52	0	13	56	25	6	100
*INTERIOR AND EXTERIOR FINISHINGS PERSONNEL	48	38	24	5	0	115	42	33	21	4	0	100
SHOP PERSONNEL	6	3	8	3	1	21	29	14	38	14	5	100
ROOFING PERSONNEL	4	2	3	0	0	9	44	22	33	0	0	99**
MASONRY PERSONNEL	61	40	53	13	1	168	36	24	32	8	1	101**
SUPERVISORY AND ADMINISTRATIVE PERSONNEL	0	2	26	40	31	99	0	2	26	40	31	99**
STRUCTURAL PLANNERS	0	10	25	18	11	64	0	16	39	28	17	100

\* Totals do not include Carpentry job type figures as they are included in the overall Carpentry cluster totals

\*\* Not equal to 100 percent due to rounding

## AFSC 552X0

The specialty jobs described in the previous section sometimes intermixed the three AFSCs and the nine civilian series in the study. In this and the following sections, the military AFSCs will be discussed separately. Where applicable, skill level, duty AFSC, CONUS/ overseas, total active federal military service, job satisfaction data, and training documents will be analyzed. The 552X0 and 552X1 AFSC sections will be in the same basic format, while the 55273 section will be somewhat unique. For AFSC 55273, uniqueness is a function of the skill level difference (since all members are at the 7-skill level).

### ANALYSIS OF AFSC 552X0

General AFSC Description. Carpentry Specialists (AFSC 552X0) perform a wide variety of tasks and duties (834 tasks in all), such as erecting walls, repairing hardwood flooring, and replacing floor joists. The carpenters' job, however, does not stop with these typical tasks; they also perform locksmithing, staining and finishing, and power and hand tool repair functions.

There are very few managerial/supervisory tasks performed by members of this AFSC, which is a result of the merger of the Carpenters and Masons at the 7-skill level. Once the 7-skill level is obtained, a new AFSC (55273 Structural Technicians) is formed. As a result, the carpentry AFSC terminates at the 5-skill level.

### Skill Level Descriptions

DAFSC 55230/55250. Three- and 5-skill level members were found performing basically the same jobs and, therefore, have been combined for the purpose of skill level description. The 999 members in this group (46 percent of the total survey sample) have an average paygrade of E-4 and 44 months TAFMS. Most work time is spent on tasks relating to installing and maintaining interior and exterior finishings, which includes tasks such as cutting plexiglass, applying protective coatings (paint, stain, varnish, etc.), and repairing hardwood flooring. The job of the 3- and 5-skill level worker is extremely task-oriented, with very little time being spent on supervisory-managerial-related activities. Job satisfaction indicators for the two skill levels are slightly different, as displayed in Table 10, but, overall, were high for both groups. (For examples of tasks performed by these airmen, see Appendix B.)

TABLE 10  
JOB SATISFACTION INDICATORS FOR  
55230 AND 55250 PERSONNEL

	<u>55230</u>	<u>55250</u>
<u>EXPRESSED JOB INTEREST</u>		
INTERESTING	74	73
<u>PERCEIVED USE OF TALENTS</u>		
FAIRLY WELL TO PERFECTLY	76	78
<u>SENSE OF ACCOMPLISHMENT</u>		
SATISFIED	78	71
<u>PERCEIVED USE OF TRAINING</u>		
FAIRLY WELL TO PERFECTLY	76	75
<u>REENLISTMENT INTENTIONS</u>		
WILL RETIRE	*	2
WILL/PROBABLY WILL REENLIST	64	70

\* Equals less than 1 percent

### Analysis of AFR 39-1 Specialty Description

Three- and 5-skill level data were compared to the AFR 39-1 Specialty Description dated 1 January 1982. These descriptions are intended to give a broad overview of the duties and tasks performed at the various skill levels of the career ladder. Using the data collected from members holding DAFSC 552X0, the current AFR 39-1 description was analyzed for completeness of coverage of the various jobs identified within the career ladder structure. The current document was found to be complete and seemed to be supporting the needs of the field quite well.

### Analysis of TAFMS Groups

This section provides a description of the jobs performed by 552X0 TAFMS groups and how the perceptions of these jobs change over time. Due to the merger action which occurs at the 7-skill level, the greatest number of 552X0 members is found in the 1-48 months TAFMS group. As TAFMS increases, group membership decreases, which results in the second-enlistment group being less than half the size of the 1-48 months TAFMS group.

First-Enlistment (1-48 months TAFMS). Of the 996 552X0 members surveyed, 609 (61 percent) were identified as being in their first enlistment. The average paygrade for this group is E-3 and the average number of tasks performed is 109. These tasks are concentrated primarily in two major areas: installing and maintaining interior and exterior finishings and framing buildings. Sample tasks associated with these areas include erecting exterior walls, installing insulation vapor barriers, replacing door closers, constructing rough sills, and laying out or cutting double top plates. (For a more complete listing of tasks performed by this group, see Appendix B.)

Table 11 contains job satisfaction data for this group, as well as 1983 comparative data. Comparative data are the combined results of all surveys completed in 1983 on AFSCs which are in the direct support area. A comparison between TAFMS groups in this AFSC and the comparative sample displays any differences that might exist between them. The greatest area of difference is in expressed job interest, where 70 percent of those in the present sample stated their job was interesting, as opposed to 79 percent in the comparative data. Overall, job satisfaction indicators for the 552X0 career ladder are high.

Second-Enlistment (49-96 Months TAFMS). Those 552X0 members who are in their second enlistment number 239 (24 percent of the total 552X0 sample). On the average, they perform 125 tasks, have been at their present duty location for 39 months, and hold a paygrade of E-4. Tasks performed by members of this group are extremely similar to those performed by the 1-48 months TAFMS group. The top duty is still maintaining interior and exterior finishings and there are still very few supervisory tasks performed. There are four members of the group, however, who are instructors at the Technical Training Center at Sheppard AFB. They perform tasks such as conducting resident course classroom training and demonstrating how to locate

technical information. This is perhaps the only major difference between the two groups. Job satisfaction indicators for this group, as well as the comparative data, are displayed in Table 11. As the table shows, all indicators for the 552X0 49-96 TAFMS group are high, with the greatest difference being in the area of reenlistment intentions, where the comparative data shows 74 percent stating intent to reenlist as compared to 82 percent for the second-enlistment groups in the current survey.

TABLE 11

JOB SATISFACTION INDICATORS FOR 552X0 TAFMS GROUPS

	<u>1-48 MONTHS TAFMS</u>		<u>49-96 MONTHS TAFMS</u>	
	<u>CURRENT SURVEY</u>	<u>COMPARATIVE DATA</u>	<u>CURRENT SURVEY</u>	<u>COMPARATIVE DATA</u>
<u>EXPRESSED JOB INTEREST:</u>				
INTERESTING	70	79	77	76
<u>PERCEIVED USE OF TALENTS:</u>				
FAIRLY WELL TO PERFECTLY	77	82	79	83
<u>SENSE OF ACCOMPLISHMENT:</u>				
SATISFIED	72	76	73	75
<u>PERCEIVED USE OF TRAINING:</u>				
FAIRLY WELL TO PERFECTLY	75	79	74	76
<u>REENLISTMENT INTENTIONS:</u>				
WILL RETIRE	1	1	*	1
WILL/PROBABLY WILL REENLIST	59	57	82	74

\* Less than 1 percent

### Training Analysis

Technical school subject-matter specialists were asked to perform a matching of inventory tasks to career ladder training documents. Task performance, task knowledge, and subject performance levels were all analyzed against occupational survey data in terms of percent members performing (PMP), training emphasis (TE), and task difficulty (TD) ratings. Subject-matter specialists at the technical training center matched career ladder tasks to appropriate blocks and paragraphs of the career ladder STS and POI. The PMP, TE, and TD ratings associated with these matched tasks are the data used to analyze each paragraph of the STS and each block of the POI.

### Specialty Training Standard (STS)

A comprehensive review of STS 552X0 (dated December 1978, with changes in November 1979 and August 1983) was completed comparing STS items to survey data. STS paragraphs containing general information of subject-matter knowledge requirements were not evaluated.

Paragraphs and subparagraphs of the STS seem to be well supported by survey data. A careful review of the document was completed, which included tasks matched to STS items and tasks not matched to paragraphs and subparagraphs of the STS. All tasks matched to the STS had high enough PMP to justify a need for training in those areas, and tasks not referenced had low enough PMP to justify them not being matched to the paragraphs and subparagraphs of the STS.

### Plan of Instruction (POI)

POI J2ABR55230, dated December 1982, was analyzed to determine if document blocks were supported by survey data. To perform this analysis, a computer product was generated which displayed the current POI, along with matching survey data.

All blocks of the POI seem to be well supported. There does appear to be a problem in the area of tasks not referenced, as many of these tasks had high TE, TD, and percent members performing figures. Table 12 lists specific examples of these tasks which should be reviewed by training personnel for possible inclusion in the text of the POI. A complete listing of tasks not referenced to the POI is included in the training extract.

Overall, both the STS and the POI for Carpentry Specialists seem to be supporting the needs of the career ladder.

TABLE 12

EXAMPLES OF TASKS NOT REFERENCED TO THE POI WITH HIGH TE,  
TD, OR PERCENT MEMBERS PERFORMING

<u>SKS</u>	<u>TNG EMPH</u>	<u>1-48 MOS TAFMS PERCENT MEMBERS PERFORMING</u>	<u>TASK DIFF</u>
ECT INTERIOR PARTITIONS	6.65	42	4.07
INSTRUCT INTERIOR PARTITIONS	6.60	54	4.04
ATCH BUILT-UP ROOFING BY COLD METHOD	6.21	35	4.42
AYOUT OR CUT DOOR OR WINDOW UNITS	6.03	52	5.42
JUST PANIC HARDWARE	5.90	60	5.48
PAIR DOOR OR WINDOW UNITS	5.45	48	4.15
ARPEN PORTABLE POWER TOOLS	5.45	76	4.97
IT PLEXI-GLASS TO SPECIFIC DIMENSIONS	5.36	77	3.21
ATCH BUILT-UP ROOFING BY HOT METHOD	5.35	43	5.90
AYOUT OR CUT HIP RAFTERS	5.17	43	6.36
INSTALL OR REPLACE LINOLEUM FLOOR COVERING	5.17	53	5.37
REMOVE OR REPLACE PARTS ON PORTABLE POWER EQUIPMENT	5.15	59	4.23

ean TE = 3.23

ean TD = 5.00

### CONUS/Overseas Analysis

An analysis of continental United States (CONUS) and overseas 5-skill level members was performed based on 552X0 survey data. The reason for this comparison was to determine possible differences between the two groups in areas such as task performance (for training purposes), job satisfaction indicators, and background information. This section, then, contains the results of this analysis.

There were 778 5-skill level members in the total 552X0 sample, with 559 stationed in CONUS and 219 stationed overseas. No differences were found in any of the analyzed areas. In task performance areas, CONUS members spent 50 percent of their total job time on 85 tasks, while overseas members spent the same amount of time on 83 tasks. Both groups had Installing and Maintaining Interior and Exterior Finishings (Duty J) as their primary duty and both had 89 percent members performing this duty. An in-depth review of the specific tasks associated with each group was performed and, again, no meaningful differences were found.

### 552X0 Summary

The following areas have been covered in this chapter: an analysis of 552X0 3- and 5-skill levels, the AFR 39-1 Specialty Description, the 1-48 months TAFMS group, the career ladder training documents (STS and POI), and CONUS/overseas differences. Findings indicated that 3- and 5-skill level members were performing basically the same jobs and utilizing the same sets of tasks, and they were performing little or no supervisory or managerial functions. The AFR 39-1 Specialty Description was found to describe the career ladder quite well. The 1-48 months TAFMS group was discussed and described in light of it being the target group for training purposes, the 49-96 TAFMS group was found to be quite similar to the first-enlistment group. The training analysis conducted on the 552X0 STS and POI was explained and both documents were generally supporting the needs of the field, although there were many tasks not referenced to the course POI which had high TE, TD, and percent members performing ratings. Examples of these tasks were given in Table 12. CONUS/overseas groups were analyzed to determine if any differences existed; however, none were noted.



## ANALYSIS OF AFSC 552X1

General AFSC Description. The AFR 39-1 Specialty Summary section describes the 552X1 Masonry AFSC in the following manner: "Constructs, maintains, and repairs masonry and concrete buildings and structures." (Appendix C contains examples of tasks which best describe the AFSC.)

The Masonry career ladder is much smaller than the Carpentry AFSC, having only 393 members assigned, as opposed to 1,767 Carpenters. There are 187 Masons in the survey, accounting for 9 percent of the total survey sample and 48 percent of the Masonry career ladder. The average paygrade for career ladder members is E-4; average TAFMS is 45 months. About one-third (36 percent) of all Masonry Personnel are stationed overseas. Two-thirds (66 percent) of those surveyed are at the 5-skill level.

As is true for the Carpenters, there is a noticeable lack of managerial or supervisory tasks performed by the Masons. This, again, is due to the merging of the two AFSCs at the 7-skill level.

### Skill Level Descriptions

DAFSC 55231/55251. Few differences were found between the 3- and 5-skill level which made it possible for them to be combined and discussed here as one group. There are 187 members in these combined skill levels (which represents the total masonry sample) who spend 50 percent of their total job time performing 89 tasks. (Examples of these tasks can be found in Table 13 and Appendix C). Besides describing the 3- and 5-skill levels of the AFSC, Table 13 also describes the career field as a whole, since the 187 skill level members also make up the entire 522X1 survey sample. That is to say, 100 percent of those surveyed are in the 3- or 5-skill level. On the average, members of this group perform 135 tasks. Job satisfaction indicators are high in all areas, as displayed in Table 14.

TABLE 13

## EXAMPLES OF TASKS PERFORMED BY 3- AND 5-SKILL LEVEL MEMBERS

<u>TASKS</u>	<u>PERCENT MEMBERS PERFORMING</u>
MIX MORTAR USING MORTAR MIXER	86
DETERMINE SIZE OF AGGREGATE USED IN CONCRETE MIXES	82
DRILL HOLES IN CONCRETE WITH HAND DRILLS	80
WET SUBGRADE PRIOR TO PLACING CONCRETE	80
CALCULATE RATIO MIXTURE FOR PLASTER COATING	80
FLOAT CONCRETE	80
CALCULATE RATIO MIXTURE FOR MORTAR	79
PREPARE GROUT FOR QUARRY TILES	77
REMOVE BROKEN QUARRY TILES	76
PLACE REINFORCING STEEL IN COLUMNS	75
PATCH OR REPAIR CONCRETE USING EPOXY FILLERS	75
APPLY NEAT COAT TO PLASTER WALLS FOR CERAMIC TILES	75
SEAL JOINTS OR SURFACE CRACKS IN MASONRY	75
INSTALL EXPANSION OR CONTRACTION JOINTS	73
PLUMB BLOCK, BRICK, OR STRUCTURAL TILE WALLS	72
CALCULATE RATIO MIXTURE FOR STUCCO	71
REMOVE LOOSE STUCCO	70
SURFACE CONCRETE USING HAND TOOLS	70
SCARIFY BROWN COATS	69
APPLY SEALANT TO BLOCK OR BRICK CONSTRUCTION	67
CONSTRUCT STEP FORMS	67

### Analysis of AFR 39-1 Specialty Description

The AFR 39-1 Specialty Description for AFSC 55273 (Structural Technician), dated January 1982, was analyzed against current survey data. The intent of this analysis was explained in the AFR 39-1 sections for both the carpentry and masonry AFSCs and need not be repeated here. After careful review of the document, it was found to be complete and fulfills the needs of the career ladder it supports.

### CONUS/Overseas Analysis

Structural technicians at CONUS and overseas locations were compared to see if any differences exist. Variables considered in this comparison include duty and task performance based on time spent and percent members performing data and background information such as average paygrade, TAFMS, and job satisfaction indicators. No duty or task differences could be found between the two groups, and background information was similar as well.

### Specialty Training Standard (STS)

The 55273 Specialty Training Standard, dated January 1983, was analyzed in much the same way as the masonry STS was analyzed in the previous chapter. There are no training emphasis (TE) or task difficulty (TD) data associated with the matched tasks, since these data are primarily used for making training decisions for first-enlistment personnel. An interesting discovery immediately came to light during the 55273 STS analysis. Nearly half of the paragraphs and subparagraphs in the STS have either very low percent members performing (PMP) figures or they are not supported at all by the PMP data. These low PMP figures seem to be due primarily to two different policies at work, one concerned with carpentry, supervisory, managerial, and administrative areas and the other with masonry. Further evidence that two policies might exist in the field was found by analyzing computer-generated reports that display task difficulty and training emphasis data. A background question was included in TE and TD booklets which asked raters to "indicate through which ladder you progressed". Choices listed under this question included "I do have a Duty AFSC of 55273 and my previous AFSC was 55250" and "I do have a duty AFSC of 55273 and my previous AFSC was 55251." Thus, those 55273 respondents who were 552X0s were separated from those who were 552X1s. Analysis of these data showed those who had been Masons up to the 5-skill level rating only those tasks which were masonry-related, while those who had been Carpenters rated only those tasks which were carpentry-related. The low percent of 7-skill level members performing tasks, coupled with this analysis of TD and TE data indicate that, although the masonry and carpentry AFSCs merge at the 7-skill level, a clear separation continues to exist. This seems to cause some serious problems for the STS. If the standard guidance for using PMP is followed, most of the current STS would not be supported.

TABLE 20

## REPRESENTATIVE TASKS FOR 52273 MEMBERS WITH 97+ MONTHS TAFMS

<u>TASKS</u>	<u>PERCENT MEMBERS PERFORMING</u>
WRITE CIVILIAN PERFORMANCE RATINGS	71
DIRECT DEVELOPMENT OR MAINTENANCE OF STATUS BOARDS, GRAPHS, OR CHARTS	71
COUNSEL PERSONNEL ON PERSONAL OR MILITARY-RELATED MATTERS	60
MAKE ENTRIES ON AF FORMS 1492 (DANGER)	57
DEVELOP OR IMPROVE WORK METHODS OR PROCEDURES	57
READ OR INTERPRET MASONRY CONSTRUCTION DRAWINGS	56
SUPERVISE CIVILIANS	56
INDORSE AIRMAN PERFORMANCE REPORTS (APR)	56
PREPARE OR REVIEW UNIT EMERGENCY OR DISASTER PLANS	55
DEVELOP OR UPDATE FACILITY SURVEY SCHEDULES	54
PLAN LAYOUT OF FACILITIES	52
DETERMINE JOB QUALIFICATION STANDARDS (JQS)	51
ESTIMATE QUANTITY OF MATERIALS REQUIRED FOR CARPENTRY PROJECTS	51
ESTABLISH TYPES OF MATERIAL REQUIRED FOR MASONRY PROJECTS	51
APPLY OIL TO FORMS PRIOR TO CONCRETE PLACEMENT	51
READ OR INTERPRET CARPENTRY CONSTRUCTION DRAWINGS	47
SKETCH WORKING DRAWINGS	42
REVIEW AF FORMS 637 (BCE JOB ORDER LOG)	37
EVALUATE CONTINGENCY PROCEDURES	36

TABLE 19

## REPRESENTATIVE TASKS FOR 55273 MEMBERS WITH 49-96 MONTHS TAFMS

<u>TASKS</u>	<u>PERCENT MEMBERS PERFORMING</u>
INSPECT PORTABLE POWER TOOLS	67
CLEAN PORTABLE POWER TOOLS	67
SHARPEN PORTABLE POWER TOOLS	59
ESTIMATE QUANTITY OF MATERIALS REQUIRED FOR MASONRY PROJECTS	57
READ OR INTERPRET MASONRY CONSTRUCTION DRAWINGS	52
SUPERVISE CIVILIANS	52
CUT PLEXI-GLASS TO SPECIFIC DIMENSIONS	50
APPLY OIL TO FORMS PRIOR TO CONCRETE PLACEMENT	48
READ OR INTERPRET CARPENTRY CONSTRUCTION DRAWINGS	46
DETERMINE JOB QUALIFICATION STANDARDS (JQS)	41
ESTIMATE QUANTITY OF MATERIALS REQUIRED FOR CARPENTRY PROJECTS	39
PLAN LAYOUT OF FACILITIES	35
ESTIMATE MANHOUR REQUIREMENTS	33
ESTABLISH WORK SCHEDULES	28
CONDUCT HIRING INTERVIEWS	26
DETERMINE CEMENT STRENGTH REQUIREMENTS	26

### Analysis of TAFMS Groups

49-96 Months TAFMS. Forty-six members (14 percent) of the total 55273 survey sample are in their second enlistment and they hold an average paygrade of E-5. Members spend 50 percent of their total job time performing 80 tasks, most of which are in technical areas (see Table 19), though some time is also spent on organizing and planning duties. Other than the typical technical tasks and the organizing and planning tasks performed by this group, group members also spent a significant amount of time on duties related to preparing project planning and construction layouts (also displayed in Table 19). Job satisfaction indicators are high and very close to the comparative sample, with the one exception being in the area of reenlistment where the present survey data is higher than the comparison sample (see Table 18).

97+ Months TAFMS. As stated in the general AFSC description paragraph, this group contains the largest number of AFSC 55273 personnel (283 or 36 percent of the total 55273 survey sample). Fifty percent of their total job time is spent performing 80 tasks, with most of these tasks being associated with inspecting and evaluating, organizing and planning, and directing and implementing duties (Table 20 gives examples of tasks performed by members of this group). On the average, members perform 98 tasks, are in paygrade E-6, and supervise 4 military or civilian individuals. Job satisfaction indicators for this group are high, as displayed in Table 18. These job satisfaction data are also very close to the comparative sample. While reenlistment intentions are slightly lower for the present survey, those who intend to retire are slightly higher than the comparative data; thus, even here the data are extremely close.

TAFMS data, as well as general AFSC information, made available as a result of this survey were used to review and analyze the current AFR 39-1 Specialty Description, which will be discussed in the following section.

TABLE 18

## JOB SATISFACTION INDICATORS FOR 55273 PERSONNEL

		<u>55273 SAMPLE</u>		<u>COMPARATIVE SAMPLE</u>	
	<u>55273 TOTAL SAMPLE</u>	<u>49-96 MONTHS TAFMS</u>	<u>97+ MONTHS TAFMS</u>	<u>49-96 MONTHS TAFMS</u>	<u>97+ MONTHS TAFMS</u>
<u>EXPRESSED JOB INTEREST</u>					
INTERESTING	78	76	78	76	78
<u>PERCEIVED USE OF TALENTS</u>					
FAIRLY WELL TO PERFECTLY	81	85	80	83	83
<u>USE OF ACCOMPLISHMENT</u>					
SATISFIED	79	76	80	75	74
<u>PERCEIVED USE OF TRAINING</u>					
FAIRLY WELL TO PERFECTLY	78	85	77	76	77
<u>ENLISTEMENT INTENTIONS</u>					
WILL RETIRE	16	2	19	1	15
WILL/PROBABLY WILL REENLIST	73	80	72	74	77

## ANALYSIS OF AFSC 55273

As previously stated in this OSR, Structural Technicians (AFSC 55273) are formed as a result of a merger of AFSCs 552X0 (Carpenters) and 552X1 (Masons) at the 7-skill level. While 7-skill level members were performing many technical tasks associated with both the carpentry and masonry AFSCs, they were also performing tasks in the managerial and supervisory areas. This overlap of technical and supervisory duties (as well as TAFMS, job satisfaction, and the STS) will be discussed in the following sections of the chapter. An interesting finding, which will be discussed in some detail in this section, concerns the percent members performing figures associated with any single task. Very rarely do the percent members performing figures for the total 55273 sample exceed 50 percent for an identified task. This seems to indicate at least two very different jobs within the AFSC, as was previously discussed in the SPECIALTY JOBS section of this report.

General AFSC Description. There are 330 Structural Technicians in this survey. They constitute 15 percent of the total survey sample and perform an average of 100 tasks, with 85 tasks accounting for approximately 50 percent of their total job time. Tasks which best describe the AFSC are those related to organizing and planning and installing and maintaining interior and exterior finishings (examples of those tasks are included in Appendix D). Group members supervise an average of four people (military and civilian). This is also a very senior group, with the average TAFMS being over 120 months and the average paygrade being E-6. Of the 330 members, nearly one-third (102) are stationed at overseas locations. Only one incumbent was found in the 1-48 months TAFMS group, with the greatest number (283) having 97+ months TAFMS. Job satisfaction indicators are high, as can be seen in Table 18.



### Summary

Masonry career ladder DAFSC and TAFMS groups were discussed in this chapter, and career ladder documents such as the STS, POI, and AFR 39-1 Specialty Description were all analyzed. Such variables as job satisfaction indicators, PMP figures, and TD data were used in this analysis. A summary of the findings follows.

All 187 masonry members surveyed were at either the 3- or 5-skill level because of the merger that occurs at the 7-skill level where Carpenters merge with Masons to form a new AFSC. The 3- and 5-skill level Masons were performing primarily the same tasks, with a strong emphasis on technical rather than managerial or supervisory tasks.

The 1-48 month TAFMS group, which is the target group for training, was analyzed and found to be extremely similar to the 3- and 5-skill level group, as was the 49-96 months TAFMS group. Again, this finding is not unexpected since, by the fifth year of military service, most members tend to be at the 7-skill level.

The AFR 39-1 Specialty Description was found to be supporting the needs of the field quite well. Both the STS and POI may require minor revisions. There were a number of tasks not referenced to both the STS and POI which had high enough percent members performing (above 20 percent) to justify a need for review for possible inclusion in the text of the two documents, and examples were given.

CONUS/overseas differences were also considered during the analysis, but none were found. Due to the small size of the AFSC and the high degree of similarity among jobs identified within the field, this finding seems quite logical. This finding was also true at the 7-skill level, which will be discussed in the following section on AFSC 55273, Structural Technicians.

TABLE 17

## EXAMPLES OF TASKS NOT REFERENCED TO THE 552X1 POI

TASKS	1ST ENL PMP	TD
REMOVE BROKEN QUARRY TILES	81	4
CHECK LEVEL OF BLOCK, BRICK, OR STRUCTURAL TILE CONSTRUCTION USING STRINGS	80	5
PLACE REINFORCING STEEL IN COLUMNS	75	5
SEAL JOINTS OR SURFACE CRACKS IN MASONRY	75	4
CUT DOOR OR WINDOW OPENINGS IN BLOCK, BRICK, OR STRUCTURAL TILE WALLS	69	6
PLACE REINFORCING STEEL IN WALLS	68	5
SURFACE CONCRETE USING POWER TROWELS	66	5
DRILL HOLES IN CONCRETE WITH ELECTRIC DRILLS	64	3
SET MOSAIC CERAMIC TILES	60	5
REMOVE BROKEN CERAMIC TILES	57	4
CONSTRUCT AND PLACE ANCHOR BOLT TEMPLATES	56	5
DRILL TIE WIRE HOLES IN FORMS	46	3
DETERMINE FORM REQUIREMENTS FOR SIZE, SHAPE, STRENGTH, OR PLACEMENT	43	6
ASSEMBLE METAL FORMS FOR FOOTINGS	42	3
APPLY STUCCO TO WIRE SURFACES	39	6
APPLY PLASTER TO MASONRY SURFACES	37	6
DRILL HOLES IN CONCRETE WITH PNEUMATIC DRILLS	34	4

Mean TD = 5.00

Standard Deviation = 1.00

TABLE 16

## EXAMPLES OF TASKS NOT REFERENCED TO THE 552X1 STS

TASKS	PERCENT MEMBERS PERFORMING	TASK DIFF
	1-48 MONTHS TAFMS	
PREPARE GROUT FOR QUARRY TILES	81	4
REMOVE BROKEN QUARRY TILES	81	4
APPLY NEAT COAT TO PLASTER WALLS FOR CERAMIC TILES	77	5
CUT AND SHAPE CERAMIC OR QUARRY TILES USING POWER EQUIPMENT	76	5
SEAL JOINTS OR SURFACE CRACKS IN MASONRY	75	4
CUT DOOR OR WINDOW OPENINGS IN BLOCK, BRICK, OR STRUCTURAL TILE WALLS	69	6
CHECK MORTAR JOINTS FOR PROPER THICKNESS USING STORY POLES	67	5
SET MOSAIC CERAMIC TILES	60	5
SET CERAMIC TILES OTHER THAN MOSAIC CERAMIC TILES	58	5
REMOVE BROKEN CERAMIC TILES	57	4
PREPARE GROUT FOR CERAMIC TILES	55	4
CHECK MORTAR JOINTS FOR PROPER THICKNESS USING GAUGE STRIPS	55	5
LAYOUT QUARRY TILES	53	6
LAYOUT MOSAIC CERAMIC TILES	53	5
LAY BLOCK OR BRICK WALLS USING CORNER BLOCKS AND LINE	51	6
APPLY THIN SET TO MASONRY OR GYPSUM BOARD	47	5
INSTALL REBAR IN LOAD BEARING BLOCK WALLS	45	4
FLOAT CERAMIC OR QUARRY TILES	38	5
REPAIR CRACKS OR HOLES IN PLASTER WALLS OR CEILING	37	5
LAYOUT CERAMIC TILES OTHER THAN MOSAIC CERAMIC TILES	29	5

specialists to review the document and revise or otherwise update the POI as necessary. Some examples of blocks which have low PMP on the matched tasks are as follows:

BLOCK III 4C.

TASK

1ST ENL

III 4C. Given an Air Force regulation, manual, and pamphlet, locate desired information in the publication, with instructor assistance for most parts of the task.

MEAS: PC

-----  
Demonstrate how to locate technical information

4

BLOCK III 5A.

TASK

1ST ENL

Given specifications and the tools and equipment for tile work, and observing safety precautions, cut, drill, and shape ceramic tile, with instructor assistance for most parts of the task.

MEAS:PC

-----  
Estimate quantity of materials required for masonry projects

3

Apply surface bonding to masonry surfaces

1

Tasks not referenced to POI blocks were also reviewed and, there were many tasks not matched to the course POI, which had high PMP figures. Table 17 lists examples of these tasks, and it is again recommended that technical training personnel review the tasks not referenced for possible inclusion in the training document. A complete listing of tasks not referenced is provided in the training extract.

## Training Analysis

As previously explained in the Carpentry TRAINING ANALYSIS section, technical school subject-matter specialists were asked to perform a matching of inventory tasks to career ladder training documents. This section provides the results of an analysis performed on these matchings. One important difference between this and the previous section on AFSC 552X0 is the lack of training emphasis (TE) data. After a careful review of the responses received from senior NCOs in the field, it became apparent that the level of agreement on what should or should not be trained was poor. This lack of rater agreement seems to indicate two different training policies in the field. It was, therefore, not possible to use the accumulated data as an analysis tool against the STS or course POI for decisionmaking purposes. These two documents will be reviewed and discussed totally in terms of the percent members performing and task difficulty data.

### Specialty Training Standard (STS)

The STS for AFSC 552X1 (Masonry Specialist), dated December 1978, was reviewed to determine its adequacy in fulfilling the needs of the career ladder it supports. Task performance, task knowledge, and subject performance levels were all analyzed against occupational survey data in terms of percent members performing (PMP) and task difficulty (TD) ratings. As stated in the Carpentry section, subject-matter specialists at the technical training center were asked to match career ladder tasks to appropriate paragraphs of the STS (as well as the POI). The PMP and TD ratings associated with these matched tasks are the data used to analyze each paragraph of the STS.

After a careful review of the STS, it seems clear that all paragraphs and subparagraphs of the current document are well supported by survey data. There are, however, many tasks not matched to the STS which have high enough PMP figures to indicate a need for review for possible inclusion in the text of the document. These tasks have 20 percent or higher members performing, which normally indicates a need for training in the specific task area. Table 16 gives specific examples of these tasks with the matched PMP figures for 1-48 months TAFMS personnel and TD data. Mean TD is 5.00 with a standard deviation (SD) equal to 1.00. (For a discussion and explanation of TD ratings, refer to the Task Factor Administration section.) Technical training personnel should review the list of tasks not referenced for possible inclusion in the STS.

### Plan of Instruction (POI)

POI J3ABR55231, Masonry Specialist, dated December 1982, was reviewed in the same manner as the STS, which was described in the previous section. Several blocks were found to have extremely low PMP figures on matched tasks. These low PMP figures indicate a need for experienced subject-matter

### Analysis of AFR 39-1 Specialty Description

The AFR 39-1 Specialty Description for AFSC 552X1 (Masonry Specialist), dated January 1982, was analyzed to determine how well it described the various duties and responsibilities of the career ladder. The current specialty description provides a good general overview of the Masonry AFSC and the range of jobs performed by career ladder members.

### Analysis of TAFMS Groups

First-Enlistment (1-48 Months TAFMS). A total of 98 members are in the 1-48 months TAFMS group (about half of the total 552X1 survey sample). On the average, they are in paygrade E-3, perform 125 tasks, and all are stationed in CONUS. Fifty percent of their job time is spent on 86 tasks primarily related to constructing and maintaining concrete structures. A table listing representative tasks is not provided, since this group consists of surveyed 3- and 5-skill level workers and, thus, the 3-, 5-skill level task list (Table 13) is also indicative of the 1-48 months TAFMS group.

Job satisfaction indicators for 552X1 first-enlistment personnel were compared to 1983 comparative data (Table 15). Overall, job satisfaction indicators for the current survey are slightly lower than that of the comparative sample; however, all indicators still remain high. The lowest reading is displayed in the area of expressed job interest, where 64 percent stated they found their job interesting.

Second-Enlistment (49-96 Months TAFMS). A total of 45 survey respondents were found to be 552X1 second-enlistment personnel (24 percent of the 552X1 survey sample). They perform an average of 145 tasks, with 82 tasks accounting for 50 percent of their total job time. Forty-two percent are stationed overseas. Their average time in present job is 51 months and the average paygrade for members of this group is E-4. As is true with the first-enlistment group, the 3- and 5-skill level task list (Table 13) also represents tasks performed by second-enlistment personnel. There is an absence of supervisory-managerial tasks at this level; the job remains technical through the second enlistment.

Job satisfaction indicators for the 49-96 months TAFMS group remain high (as displayed in Table 15). This table also includes comparative data. A comparison of survey data between this TAFMS group and the comparative data shows that current survey indicators are fairly close, with the greatest difference being found in the area of expressed job interest, where 64 percent of current survey respondents expressed their job as being interesting, as opposed to 76 percent for the comparative sample.

TABLE 15

## JOB SATISFACTION INDICATORS FOR 552X1 TAFMS GROUPS AND COMPARATIVE DATA

	552X1 FIRST JOB	COMP DATA FIRST JOB	552X1 FIRST ENLISTMENT	COMP DATA FIRST ENLISTMENT	552X1 SECOND ENLISTMENT	COMP DATA SECOND ENLISTMENT
<u>EXPRESSED JOB INTEREST</u>						
INTERESTING	68	78	66	79	64	76
<u>PERCEIVED USE OF TALENTS</u>						
FAIRLY WELL TO PERFECTLY	76	80	77	82	78	83
<u>SENSE OF ACCOMPLISHMENT</u>						
SATISFIED	68	74	74	76	67	75
<u>PERCEIVED USE OF TRAINING</u>						
FAIRLY WELL TO PERFECTLY	86	81	82	78	78	76
<u>REENLISTMENT INTENTIONS</u>						
WILL RETIRE	2	*	1	*	0	1
WILL/PROBABLY WILL RETIRE	72	55	69	57	80	74

TABLE 14

JOB SATISFACTION INDICATORS FOR  
55231/55251 PERSONNEL

	<u>55231</u>	<u>55251</u>
<u>EXPRESSED JOB INTEREST</u>		
INTERESTING	64	69
<u>PERCEIVED USE OF TALENTS</u>		
FAIRLY WELL TO PERFECTLY	82	77
<u>SENSE OF ACCOMPLISHMENT</u>		
SATISFIED	68	75
<u>PERCEIVED USE OF TRAINING</u>		
FAIRLY WELL TO PERFECTLY	79	80
<u>REENLISTMENT INTENTIONS</u>		
WILL RETIRE	9	2
WILL/PROBABLY WILL REENLIST	67	77



There are many tasks not referenced which had above 20 percent members performing, but it seems any review of this document will need to be handled very differently than that of the 3- and 5-skill level Carpenters and Masons. Training personnel should review the current STS, with careful consideration given to each item to determine if there is a need based on the job of carpentry or masonry supervisors, rather than lumping them together and making decisions based on a need by Structural Technicians as a whole. These findings suggest that a merger at the 7-skill level may not be appropriate, but this matter will be discussed in the following section.

#### Percent Members Performing (PMP) Analysis

During analysis of the Structural Technicians career ladder, it became apparent that few tasks were performed by as many as 50 percent of DAFSC 55273 personnel. Most PMP figures were far below the 50 percent range, which normally indicates a heterogeneous career ladder, which is exactly what the Structural Technicians AFSC seems to be. The relatively low PMP figures obviously originate from the diverse roots of 55273 personnel and are indicative of the differences that exist between carpentry and masonry AFSCs. Referring back to Tables 19 and 20 on the 49-96 and 97+ months TAFMS groups, one can see how quickly the PMP figures drop below the 50 percent range. It is these PMP figures which indicate the diverse nature of the AFSC. If it is apparent in the data that two substructures exist within the 55273 career ladder, and if this separation can be attributed to the diverse roots of the AFSC, then this tends to present an obvious question: Why do the 552X0 and 552X1 AFSCs merge at the 7-skill level? The data do not seem to support this action. At present, the masonry AFSC is extremely small, and the smallest AFSCs are always the hardest to manage. Although current OSR data do not support a 7-skill level merger, perhaps manpower management and proper career ladder progression dictate it. Still, this area should be reviewed by classification and training personnel.

#### Summary

This section began with a discussion of the Structural Technician AFSC and a General AFSC Description. The total sample of 55273 members was very senior, averaging over 120 months TAFMS and holding an average pay-grade of E-6. TAFMS groups were discussed and the 49-96 months TAFMS sample was performing more technical tasks than the more senior 97+ months TAFMS group.

Job interest indicators were high and, overall, were found to be very close to the comparative sample. The AFR 39-1 Specialty Description seemed to be supporting the needs of the career ladder quite well. CONUS/overseas groups were analyzed and no differences were noted.

The STS for the AFSC had very low PMP figures associated with matched tasks, and PMP figures for most tasks in the AFSC were low. This may be a result of the diverse backgrounds (Carpentry and Masonry) that merge at the 7-skill level to form the 55273 AFSC. Current survey data do not support the merger action.

In light of these findings, it seems appropriate to compare both the Carpentry and Masonry AFSCs with the Structural Technicians. This comparison will be conducted in the following section.

#### COMPARISON OF CARPENTERS, MASONS, AND STRUCTURAL TECHNICIANS

Comparisons between the three AFSCs were made based on percent members performing (PMP) figures. Table 21 lists tasks taken from occupational survey data and displays the PMP figures for Carpenters (552X0), Masons (552X1), and Structural Technicians (55273). The boxed areas shown on the table indicate areas performed primarily by the AFSC under which they are listed. As the table displays, carpentry tasks are performed mostly by Carpenters and masonry tasks by Masons; however, Structural Technicians are performing some of both the carpentry and masonry tasks, though not with particularly high percentages. As expected, the highest percent of Structural Technicians performing any given task is found in the supervisory areas.

This table clearly shows there are some definite differences between Carpentry and Masonry Personnel, and that Structural Technicians, while performing tasks related to both, are performing these tasks in small numbers. The only area where Structural Technicians are performing at above 50 percent is in the general management area where overlap would be expected, regardless of AFSC. Again, as explained in the 55273 STS section, this seems to indicate two opposite forces at work. If only those members who supervised Carpenters had been surveyed, most likely the percent members performing carpentry tasks at the 7-skill level would be much higher, and the same probably would occur for the Masons.

The percentage of 552X0, 552X1, and 55273 members in the survey is displayed in Figure 2 and clearly shows the size difference between carpentry and masonry personnel. As stated in the previous section, it is this size difference which may be dictating the need for a merger at the 7-skill level.

One other area worth comparing is job satisfaction. (Job satisfaction indicators for the three AFSCs are listed in Table 22.) Only 5-skill level 552X0/552X1 members were used for the comparison, since the intent here is to see if job satisfaction indicators differ as a result of the 7-skill level merger, although it is also possible to see differences among and between the three AFSCs in the table. Although 55273 members seem to have generally

higher job satisfaction overall, the figures in the table are still relatively close. The only real noticeable difference is in the area of reenlistment intentions where 16 percent of all 55273 personnel indicated an intent to retire. This, of course, is expected, since 55273 members normally have more total active federal military service than their 5-skill level carpentry and masonry counterparts.

#### Summary

Carpenters and Masons are performing a different subset of tasks, as displayed in Table 21. This difference in task performance causes one to question the 7-skill level merger-action of the two ladders. The need for a 7-skill level merger-action is further placed in question by the low percent members performing found on tasks associated with the Structural Technicians. Job satisfaction indicators for the three AFSCs were compared and were found to be generally high.

FIGURE 2

SURVEY SAMPLE REPRESENTATION BY AFSC

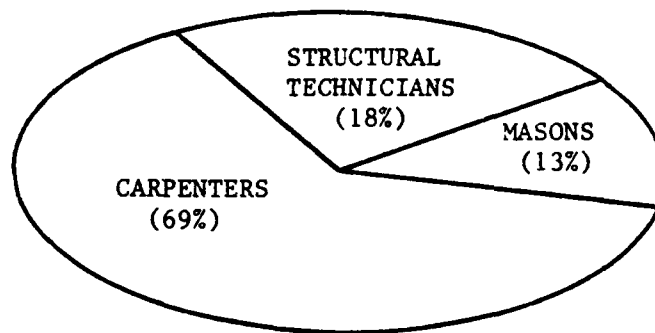


TABLE 21

EXAMPLES OF TASKS WHICH BEST DIFFERENTIATE BETWEEN  
CARPENTERS, MASONS, AND STRUCTURAL TECHNICIANS

TASKS	PERCENT MEMBERS PERFORMING		
	552X0	552X1	55273
LAY OUT OR CUT SOLID GIRDERS	35	0	17
INSTALL OR REPLACE WOODEN DROP SIDING	54	9	26
INSTALL OR REPLACE DOOR OR WINDOW CASINGS	37	3	23
ADJUST PANIC HARDWARE	53	9	33
CAULK AREAS SUCH AS WINDOWS, SINKS, OR BATHTUBS	40	0	17
LAY OUT OR CUT TRIMMERS	35	9	22
INSTALL OR REPLACE SHEATHING ON EXTERIOR WALLS OR ROOFS	8	82	20
DETERMINE SIZE OF AGGREGATE USED IN CONCRETE MIXES	8	82	20
CALCUATE RATIO MIXTURE FOR PLASTER COATING	8	82	18
CALCULATE RATIO MIXTURE FOR STUCCO	6	70	15
PLUMB BLOCK, BRICK, OR STRUCTURAL TILE WALLS	5	64	13
SCARIFY BROWN COATS	7	64	13
MIX PLASTER BY HAND FOR ROUGH COAT	5	61	12
APPLY SCRATCH COAT FOR PLASTER WALLS OR CEILINS	3	58	10
MAKE ENTRIES ON AF FORMS 1492 (DANGER)	11	0	55
WRITE CIVILIAN PERFORMANCE RATINGS	0	0	55
DETERMINE JOB QUALIFICATION STANDARDS (JQS)	11	9	49
PREPARE OR REVIEW UNIT EMERGENCY OR DISASTER PLANS	5	6	52
SUPERVISE CIVILIANS	18	6	55
CONDUCT HIRING INTERVIEWS	10	13	46

TABLE 22

## JOB SATISFACTION FOR MILITARY MEMBERS OF SPECIALTY GROUPS

	<u>55250</u>	<u>55251</u>	<u>55273</u>
<u>EXPRESSED JOB INTEREST</u>			
INTERESTING	73	69	78
<u>PERCEIVED USE OF TALENTS</u>			
FAIRLY WELL TO PERFECTLY	78	77	81
<u>SENSE OF ACCOMPLISHMENT</u>			
SATISFIED	71	75	79
<u>PERCEIVED USE OF TRAINING</u>			
FAIRLY WELL TO PERFECTLY	75	80	78
<u>REENLISTMENT INTENTIONS</u>			
WILL RETIRE	2	2	16
WILL/PROBABLY WILL REENLIST	70	77	73

## IMPLICATIONS

Three major areas were to be addressed in this OSR. These include (1) determining if there are any task differences between the three military AFSCs and their associated civilian counterparts; (2) training considerations (addressed in the analysis of the various specialty training standards and course plans of instruction); and (3) the merger action which occurs between the 552X0s and the 552X1s at the 7-skill level. The following paragraphs will consider each of these areas separately.

Military-Civilian Analysis. The SPECIALTY JOB section of this OSR separated the total survey sample into its various components (3 clusters, 3 independent job types, and 4 job types). These groups included a mixture of military and civilian personnel. A task analysis was performed on each of the identified specialty jobs to determine (among other things) where the greatest differences were. The findings indicate that, other than in the number or percentage of military or civilian members in each group, very few differences existed. For instance, the roofing job type found within the Carpentry cluster was 74 percent civilian and had the largest civilian population of any group in the study; however, actual task differences could not be found. There were variations on the average number of tasks performed as well as on the amount of time spent on those tasks, and sometimes military members were found performing more tasks overall than their civilian counterparts. This seems to be because civilians are hired for a specific job and overlap very little into other job areas, while military members may be asked to perform any number of tasks not associated with their primary duties (contingency duties, special projects, etc). This finding is neither unusual nor unexpected. Any task list which describes a military member's job includes all those tasks which describe the job of a civilian counterpart, and more. Civilian members were not performing any tasks not performed by military group members.

Training Considerations. The specialty training standards for each of the three AFSCs surveyed were analyzed against percent members performing those tasks matched by training personnel to the three documents. The 552X1 STS also had training emphasis data which was used in the analysis process. Documents supporting the carpentry and masonry AFSCs both seemed to have paragraphs and subparagraphs well supported by the survey data. There were tasks not referenced to both which had enough percent members performing (above 20 percent) to show a need for them to be reviewed by technical training school personnel for possible inclusion in the STS. The 55273 Structural Technician had very low percent members performing on matched tasks. These low PMP figures indicate a need for review of the entire document; however, one must consider the diverse backgrounds of 55273 personnel and the somewhat unique problems apparently caused by the merge action.

The plans of instruction for the 552X0/X1s were analyzed in much the same manner as the STS and with similar results. Both documents were found to generally support the needs of the fields, although review in the area of tasks not referenced is recommended. As in the case of the STS, many of these tasks had high enough percent members performing figures to justify possible inclusion into various blocks of the POI.

The 7-Skill Level Merger. This action was analyzed in several ways. These include answering the following questions:

1. Is the background of the Structural Technicians sufficient enough to make them qualified to train both Carpenters and Masons?
2. Were 55273 members performing both carpentry and masonry tasks?
3. Did the Carpenters and Masons continue to specialize at the 7-skill level (Masons supervising Masons and Carpenters supervising Carpenters)?

In the SPECIALTY JOBS section of the report it became apparent by virtue of identification of separate clusters (one for the Masons and one for Carpenters) that the two AFSCs are indeed performing different jobs. There are different tasks performed by members of each cluster and very little overlap was found. Thus, the jobs of the Carpenters and the Masons are not similar at all.

When those tasks specific to 55273 personnel were analyzed, only those general supervisory tasks were found to have very high percent members performing. Most tasks performed by members of this group which were technical in nature had very low percent members performing. This seems to indicate a split in task performance by the Structural Technicians. In other words, the task separation which was noted at the 5-skill level and below for the 552X0s and 552X1s continues on through the 7-skill level as well.

To summarize, a merger action at the 7-skill level is not supported by survey data. It is important to note, however, that this action may be required due to the small size of the masonry AFSC. It may, indeed, facilitate career ladder progression, and this may be what drives the merger. Nonetheless, the data indicate no job-related basis for the merger.



## APPENDIX A

TABLE A1

## CARPENTRY CLUSTER

AVERAGE TOTAL ACTIVE FEDERAL MILITARY SERVICE: 60 MONTHS

AVERAGE TOTAL FEDERAL CIVIL SERVICE: 159 MONTHS

MILITARY GROUP MEMBERSHIP: 69%

CIVILIAN GROUP MEMBERSHIP: 31%

TASKS	PERCENT MEMBERS PERFORMING
J340 INSTALL OR REPLACE DOOR JAMBS OR STOPS	96
J339 INSTALL OR REPLACE DOOR HINGES	91
J341 INSTALL OR REPLACE DOOR OR WALL LOUVERS	91
V810 CLEAN PORTABLE POWER TOOLS	90
J352 INSTALL OR REPLACE INSULATION VAPOR BARRIERS	90
J311 APPLY PROTECTIVE COATINGS, SUCH AS VARNISH, PAINT, OR STAIN TO EXPOSED EXTERIOR WOOD SURFACES	88
J320 CUT PLEXI-GLASS TO SPECIFIC DIMENSIONS	87
J321 ERECT METAL SCAFFOLDING	87
J328 INSTALL OR REPLACE ASPHALT ROOFING SHINGLES	86
V822 SHARPEN PORTABLE POWER TOOLS	86
J350 INSTALL OR REPLACE HAND RAILS OR BALUSTERS	85
J374 INSTALL OR REPLACE SWINGING DOORS	85
V807 ADJUST PORTABLE POWER TOOLS	84
J338 INSTALL OR REPLACE DOOR CLOSERS	84
J313 CONSTRUCT BATTEN DOORS	83
I236 ERECT EXTERIOR WALLS	83
V813 INSPECT PORTABLE POWER TOOLS	81
I249 INSTALL OR REPLACE DOUBLE TOP PLATES	81
V816 LUBRICATE PORTABLE POWER TOOLS	81
J380 INSTALL OR REPLACE VENETIAN BLINDS	80
V808 ADJUST SHOP POWER EQUIPMENT	80
V811 CLEAN SHOP POWER EQUIPMENT	79
J391 LAYOUT OR CUT CORNICES	79
I267 INSTALL OR REPLACE SUB-FLOORS	77
J407 REPAIR HARDWOOD FLOORING	76
J385 INSTALL OR REPLACE WOODEN DROP SIDING	76
L437 ADJUST PANIC HARDWARE	74
J378 INSTALL OR REPLACE TONGUE AND GROOVE FLOORING	74
J403 PERFORM ROOF OR TRUSS SCHEDULED INSPECTIONS	74
I230 CONSTRUCT ROUGH SILLS	73

TABLE A2

## BUILDING FRAMERS

AVERAGE TOTAL ACTIVE FEDERAL MILITARY SERVICE: 60 MONTHS

AVERAGE TOTAL FEDERAL CIVIL SERVICE: 153 MONTHS

MILITARY GROUP MEMBERSHIP: 49%

CIVILIAN GROUP MEMBERSHIP: 51%

TASKS	PERCENT MEMBERS PERFORMING
J341 INSTALL OR REPLACE DOOR OR WALL LOUVERS	99
J340 INSTALL OR REPLACE DOOR JAMBS OR STOPS	99
I286 LAYOUT OR CUT DOOR OR WINDOW UNITS	99
I236 ERECT EXTERIOR WALLS	98
I249 INSTALL OR REPLACE DOUBLE TOP PLATES	98
I254 INSTALL OR REPLACE HIP RAFTERS	98
I267 INSTALL OR REPLACE SUB-FLOORS	97
I291 LAYOUT OR CUT HIP RAFTERS	97
J352 INSTALL OR REPLACE INSULATION VAPOR BARRIERS	97
J321 ERECT METAL SCAFFOLDING	97
I288 LAYOUT OR CUT FIRE BLOCKING	97
I229 CONSTRUCT INTERIOR PARTITIONS	96
I230 CONSTRUCT ROUGH SILLS	96
I287 LAYOUT OR CUT DOUBLE TOP PLATES	96
I304 LAYOUT OR CUT TRIMMERS	96
J343 INSTALL OR REPLACE DOUBLE HUNG WINDOWS	96
I252 INSTALL OR REPLACE GUSSETS	96
J374 INSTALL OR REPLACE SWINGING DOORS	95
I238 INSTALL OR REPLACE BOX SILLS	95
I250 INSTALL OR REPLACE FIRE BLOCKING	95
I268 INSTALL OR REPLACE T-SILLS	95
J328 INSTALL OR REPLACE ASPHALT ROOFING SHINGLES	95
J339 INSTALL OR REPLACE DOOR HINGES	95
J320 CUT PLEXI-GLASS TO SPECIFIC DIMENSIONS	94
I270 INSTALL OR REPLACE TRIMMERS	94
J311 APPLY PROTECTIVE COATINGS, SUCH AS VARNISH, PAINT, OR STAIN TO EXPOSED EXTERIOR WOOD SURFACES	94
J355 INSTALL OR REPLACE LINOLEUM COVERING	94
I248 INSTALL OR REPLACE DOOR OR WINDOW UNITS	94
J380 INSTALL OR REPLACE VENETIAN BLINDS	93

TABLE A3

## LOCKSMITHS

AVERAGE TOTAL ACTIVE FEDERAL MILITARY SERVICE: 79 MONTHS

AVERAGE TOTAL FEDERAL CIVIL SERVICE: 132 MONTHS

MILITARY GROUP MEMBERSHIP: 50%

CIVILIAN GROUP MEMBERSHIP: 50%

TASKS	PERCENT MEMBERS PERFORMING
L437 ADJUST PANIC HARDWARE	100
L460 LUBRICATE PADLOCKS	99
L438 CHANGE CIPHER LOCK COMBINATIONS	99
L453 INSTALL OR REPLACE ELECTRIC DOOR LATCHES	98
L441 DESIGN MASTER KEY SYSTEMS	98
L456 INTERPRET SAFE OR SAFE LOCK SCHEMATICS	97
L486 REPLACE SAFE DOOR LATCHES	96
L447 EXTRACT BROKEN KEYS FROM LOCKS	95
L489 SERVICE FOLGER-ADAMS LOCKS	95
L448 HAND FILE KEYS	95
L483 REPIN VEHICLE LOCKS	93
L475 REALIGN OR REPLACE SAFE DIAL ASSEMBLIES	93
L470 MODIFY VAULT DOOR LOCKING BOLTS	92
L482 REPIN REGULAR PIN LOCKS	91
L469 MASTER KEY REGULAR PIN LOCKS	90
L461 LUBRICATE SAFE LOCKS	89
L451 INSTALL OR REPLACE CIPHER LOCKS	87
L446 DUPLICATE KEYS USING KEY DUPLICATING MACHINES	86
L442 DRILL OPEN HIGH SECURITY PADLOCKS	85
L449 IMPLEMENT MASTER KEY SYSTEMS	85
L464 MAKE ENTRIES ON AFTO FORMS 36 (MAINTENANCE RECORD FOR SECURITY TYPE EQUIPMENT)	84
L472 PERFORM SAFE LOCK PERIODIC MAINTENANCE	84
L452 INSTALL OR REPLACE DOOR LOCKS	83
L450 INSTALL OR REPLACE CABINET OR DESK LOCKS	81
L478 REMOVE OR REPLACE HIGH SECURITY PADLOCK LOCKING CYLINDERS	81
V822 SHARPEN PORTABLE POWER TOOLS	77
L480 REPAIR DRILL HOLES IN SAFE DOORS OR DRAWERS	77
V810 CLEAN PORTABLE POWER TOOLS	77
L439 CHANGE SAFE LOCK COMBINATIONS	77
L463 MAINTAIN MASTER KEYING SYSTEM RECORDS	76

TABLE A4

## SMART TEAM PERSONNEL

AVERAGE TOTAL ACTIVE FEDERAL MILITARY SERVICE: 118 MONTHS

AVERAGE TOTAL FEDERAL CIVIL SERVICE: 141 MONTHS

MILITARY GROUP MEMBERSHIP: 77%

CIVILIAN GROUP MEMBERSHIP: 23%

TASKS	PERCENT MEMBERS PERFORMING
340 INSTALL OR REPLACE DOOR JAMBS OR STOPS	98
810 CLEAN PORTABLE POWER TOOLS	97
813 INSPECT PORTABLE POWER TOOLS	95
339 INSTALL OR REPLACE DOOR HINGES	94
822 SHARPEN PORTABLE POWER TOOLS	94
807 ADJUST PORTABLE POWER TOOLS	93
808 ADJUST SHOP POWER EQUIPMENT	93
816 LUBRICATE PORTABLE POWER TOOLS	93
341 INSTALL OR REPLACE DOOR OR WALL LOUVERS	93
814 INSPECT SHOP POWER EQUIPMENT	92
811 CLEAN SHOP POWER EQUIPMENT	92
321 ERECT METAL SCAFFOLDING	91
320 CUT PLEXI-GLASS TO SPECIFIC DIMENSIONS	90
311 APPLY PROTECTIVE COATINGS, SUCH AS VARNISH, PAINT, OR STAIN TO EXPOSED EXTERIOR WOOD SURFACES	90
352 INSTALL OR REPLACE INSULATION VAPOR BARRIERS	90
338 INSTALL OR REPLACE DOOR CLOSERS	89
328 INSTALL OR REPLACE ASPHALT ROOFING SHINGLES	89
817 LUBRICATE SHOP POWER EQUIPMENT	89
437 ADJUST PANIC HARDWARE	88
350 INSTALL OR REPLACE HAND RAILS OR BALUSTERS	88
27 COUNSEL PERSONNEL ON PERSONAL OR MILITARY-RELATED MATTERS	84
196 ESTIMATE QUANTITY OF MATERIALS REQUIRED FOR MASONRY PROJECTS	82
812 INSPECT HAND TOOLS	82
380 INSTALL OR REPLACE VENETIAN BLINDS	82
22 PREPARE OR REVIEW UNIT EMERGENCY OR DISASTER PLANS	81
313 CONSTRUCT BATTEN DOORS	81
385 INSTALL OR REPLACE WOODEN DROP SIDING	81
193 ESTABLISH TYPES OF MATERIAL REQUIRED FOR MASONRY PROJECTS	80
374 INSTALL OR REPLACE SWINGING DOORS	78
819 REMOVE OR REPLACE PARTS ON PORTABLE POWER EQUIPMENT	78

TABLE A5  
FINISHINGS PERSONNEL

AVERAGE TOTAL ACTIVE FEDERAL MILITARY SERVICE: 56 MONTHS

AVERAGE TOTAL FEDERAL CIVIL SERVICE: 215 MONTHS

MILITARY GROUP MEMBERSHIP: 89%

CIVILIAN GROUP MEMBERSHIP: 11%

ASKS	PERCENT MEMBERS PERFORMING
340 INSTALL OR REPLACE DOOR JAMBS OR STOPS	89
339 INSTALL OR REPLACE DOOR HINGES	83
311 APPLY PROTECTIVE COATINGS, SUCH AS VARNISH, PAINT, OR STAIN TO EXPOSED EXTERIOR WOOD SURFACES	80
320 CUT PLEXI-GLASS TO SPECIFIC DIMENSIONS	78
321 ERECT METAL SCAFFOLDING	76
810 CLEAN PORTABLE POWER TOOLS	75
822 SHARPEN PORTABLE POWER TOOLS	74
341 INSTALL OR REPLACE DOOR OR WALL LOUVERS	73
391 LAYOUT OR CUT CORNICES	71
313 CONSTRUCT BATTEN DOORS	71
352 INSTALL OR REPLACE INSULATION VAPOR BARRIERS	69
350 INSTALL OR REPLACE HAND RAILS OR BALUSTERS	68
338 INSTALL OR REPLACE DOOR CLOSERS	68
328 INSTALL OR REPLACE ASPHALT ROOFING SHINGLES	68
374 INSTALL OR REPLACE SWINGING DOORS	65
807 ADJUST PORTABLE POWER TOOLS	64
437 ADJUST PANIC HARDWARE	62
813 INSPECT PORTABLE POWER TOOLS	59
407 REPAIR HARDWOOD FLOORING	58
403 PERFORM ROOF OR TRUSS SCHEDULED INSPECTIONS	56
816 LUBRICATE PORTABLE POWER TOOLS	56
453 INSTALL OR REPLACE ELECTRIC DOOR LATCHES	55
385 INSTALL OR REPLACE WOODEN DROP SIDING	53
383 INSTALL OR REPLACE WATER TABLES	52
808 ADJUST SHOP POWER EQUIPMENT	52
811 CLEAN SHOP POWER EQUIPMENT	49
438 CHANGE CIPHER LOCK COMBINATIONS	48
380 INSTALL OR REPLACE VENETIAN BLINDS	48
236 ERECT EXTERIOR WALLS	47
249 INSTALL OR REPLACE DOUBLE TOP PLATES	45

TABLE C3

552X1 AIRMEN  
1-24 MONTHS TAFMS

KS	PERCENT MEMBERS PERFORMING
02 DETERMINE SIZE OF AGGREGATE USED IN CONCRETE MIXES	86
00 CLEAN PORTABLE POWER TOOLS	84
04 MIX MORTAR USING MORTAR MIXER	84
03 PREPARE GROUT FOR QUARRY TILES	84
02 DRILL HOLES IN CONCRETE WITH HAND DRILLS	82
09 CALCULATE RATIO MIXTURE FOR PLASTER COATING	80
05 REMOVE BROKEN QUARRY TILES	80
02 CHECK LEVEL OF BLOCK, BRICK, OR STRUCTURAL TILE CONSTRUCTION USING STRINGS	80
04 PATCH OR REPAIR CONCRETE USING EPOXY FILLERS	78
08 APPLY NEAT COAT TO PLASTER WALLS FOR CERAMIC TILES	78
02 CUT AND SHAPE CERAMIC OR QUARRY TILES USING HAND TOOLS	78
77 MIX PLASTER USING MORTAR MIXER FOR ROUGH COAT	76
06 WET SUBGRADE PRIOR TO PLACING CONCRETE	76
00 CALCULATE RATIO MIXTURE FOR STUCCO	76
03 CUT AND SHAPE CERAMIC OR QUARRY TILES USING POWER EQUIPMENT	76
27 INSPECT CONCRETE FOR DEFECTS SUCH AS CRACKS, SCALING, SPALLS, POPOUTS, HONEYCOMBS, OR SETTLEMENT	74
04 REMOVE LOOSE STUCCO	72
06 PLUMB BLOCK, BRICK, OR STRUCTURAL TILE WALLS	72
08 CALCULATE RATIO MIXTURE FOR MORTAR	72
00 CHECK ALIGNMENT OF BLOCK, BRICK, OR STRUCTURAL TILE CONSTRUCTION USING OTHER THAN STRAIGHT EDGES	72
06 PLACE REINFORCING STEEL IN COLUMNS	70
48 SURFACE CONCRETE USING HAND TOOLS	70
04 MIX CONCRETE BY HAND USING FAST-SETTING CEMENT FOR SALT WATER PLACEMENT	70
26 FLOAT CONCRETE	70
06 SCARIFY BROWN COATS	68
73 CUT BLOCKS, BRICKS, OR STRUCTURAL TILES USING MASONRY SAWS	68
03 INSPECT PORTABLE POWER TOOLS	68
29 APPLY FINISH COAT TO STUCCO WALLS	66
47 SEAL JOINTS OR SURFACE CRACKS IN MASONRY	66
29 INSTALL EXPANSION OR CONTRACTION JOINTS	66

TABLE C2

DAFSC 55231/51 COMBINED

ASKS	PERCENT MEMBERS PERFORMING
810 CLEAN PORTABLE POWER TOOLS	86
574 MIX MORTAR USING MORTAR MIXER	86
562 DETERMINE SIZE OF AGGREGATE USED IN CONCRETE MIXES	82
627 INSPECT CONCRETE FOR DEFECTS SUCH AS CRACKS, SCALING, SPALLS, POPOUTS, HONEYCOMBS, OR SETTLEMENT	81
656 WET SUBGRADE PRIOR TO PLACING CONCRETE	80
622 DRILL HOLES IN CONCRETE WITH HAND DRILLS	80
559 CALCULATE RATIO MIXTURE FOR PLASTER COATING	80
626 FLOAT CONCRETE	80
558 CALCULATE RATIO MIXTURE FOR MORTAR	79
662 CHECK LEVEL OF BLOCK, BRICK, OR STRUCTURAL TILE CONSTRUCTION USING STRINGS	79
713 PREPARE GROUT FOR QUARRY TILES	77
813 INSPECT PORTABLE POWER TOOLS	76
715 REMOVE BROKEN QUARRY TILES	76
636 PLACE REINFORCING STEEL IN COLUMNS	75
698 APPLY NEAT COAT TO PLASTER WALLS FOR CERAMIC TILES	75
647 SEAL JOINTS OR SURFACE CRACKS IN MASONRY	75
634 PATCH OR REPAIR CONCRETE USING EPOXY FILLERS	75
660 CHECK ALIGNMENT OF BLOCK, BRICK, OR STRUCTURAL TILE CONSTRUCTION USING OTHER THAN STRAIGHT EDGES	75
703 CUT AND SHAPE CERAMIC OR QUARRY TILES USING POWER EQUIPMENT	74
673 CUT BLOCKS, BRICKS, OR STRUCTURAL TILES USING MASONRY SAWS	74
577 MIX PLASTER USING MORTAR MIXER FOR ROUGH COAT	73
629 INSTALL EXPANSION OR CONTRACTION JOINTS	73
686 PLUMB BLOCK, BRICK, OR STRUCTURAL TILE WALLS	72
694 STRIKE LINE FOR LAYING BLOCKS, BRICKS, OR STRUCTURAL TILES	72
560 CALCULATE RATIO MIXTURE FOR STUCCO	71
648 SURFACE CONCRETE USING HAND TOOLS	70
649 SURFACE CONCRETE USING POWER TROWELS	70
754 REMOVE LOOSE STUCCO	70
756 SCARIFY BROWN COATS	69
640 PLACE SUBGRADE MATERIALS IN DESIRED AREAS	68



TABLE C1

TOTAL 552X1 SAMPLE

ASKS	PERCENT MEMBERS PERFORMING
810 CLEAN PORTABLE POWER TOOLS	86
574 MIX MORTAR USING MORTAR MIXER	86
562 DETERMINE SIZE OF AGGREGATE USED IN CONCRETE MIXES	82
627 INSPECT CONCRETE FOR DEFECTS SUCH AS CRACKS, SCALING, SPALLS, POPOUTS, HONEYCOMBS, OR SETTLEMENT	81
656 WET SUBGRADE PRIOR TO PLACING CONCRETE	80
622 DRILL HOLES IN CONCRETE WITH HAND DRILLS	80
559 CALCULATE RATIO MIXTURE FOR PLASTER COATING	80
626 FLOAT CONCRETE	80
558 CALCULATE RATIO MIXTURE FOR MORTAR	79
662 CHECK LEVEL OF BLOCK, BRICK, OR STRUCTURAL TILE CONSTRUCTION USING STRINGS	79
R713 PREPARE GROUT FOR QUARRY TILES	77
V813 INSPECT PORTABLE POWER TOOLS	76
R715 REMOVE BROKEN QUARRY TILES	76
P636 PLACE REINFORCING STEEL IN COLUMNS	75
R698 APPLY NEAT COAT TO PLASTER WALLS FOR CERAMIC TILES	75
P647 SEAL JOINTS OR SURFACE CRACKS IN MASONRY	75
P634 PATCH OR REPAIR CONCRETE USING EPOXY FILLERS	75
Q660 CHECK ALIGNMENT OF BLOCK, BRICK, OR STRUCTURAL TILE CONSTRUCTION USING OTHER THAN STRAIGHT EDGES	75
R703 CUT AND SHAPE CERAMIC OR QUARRY TILES USING POWER EQUIPMENT	74
Q673 CUT BLOCKS, BRICKS, OR STRUCTURAL TILES USING MASONRY SAWS	74
O577 MIX PLASTER USING MORTAR MIXER FOR ROUGH COAT	73
P629 INSTALL EXPANSION OR CONTRACTION JOINTS	73
Q686 PLUMB BLOCK, BRICK, OR STRUCTURAL TILE WALLS	72
Q694 STRIKE LINE FOR LAYING BLOCKS, BRICKS, OR STRUCTURAL TILES	72
O560 CALCULATE RATIO MIXTURE FOR STUCCO	71
P648 SURFACE CONCRETE USING HAND TOOLS	70
P649 SURFACE CONCRETE USING POWER TROWELS	70
S754 REMOVE LOOSE STUCCO	70
S756 SCARIFY BROWN COATS	69
P640 PLACE SUBGRADE MATERIALS IN DESIRED AREAS	68

## APPENDIX C

TABLE B4

552X0 AIRMEN  
1-48 MONTHS TAFMS

TASKS	PERCENT MEMBERS PERFORMING
J340 INSTALL OR REPLACE DOOR JAMBS OR STOPS	84
V810 CLEAN PORTABLE POWER TOOLS	83
J339 INSTALL OR REPLACE DOOR HINGES	79
J320 CUT PLEXI-GLASS TO SPECIFIC DIMENSIONS	77
J341 INSTALL OR REPLACE DOOR OR WALL LOUVERS	77
V822 SHARPEN PORTABLE POWER TOOLS	76
J311 APPLY PROTECTIVE COATINGS, SUCH AS VARNISH, PAINT, OR STAIN TO EXPOSED EXTERIOR WOOD SURFACES	75
I236 ERECT EXTERIOR WALLS	75
J321 ERECT METAL SCAFFOLDING	75
V807 ADJUST PORTABLE POWER TOOLS	74
J352 INSTALL OR REPLACE INSULATION VAPOR BARRIERS	74
J374 INSTALL OR REPLACE SWINGING DOORS	73
J350 INSTALL OR REPLACE HAND RAILS OR BALUSTERS	72
V813 INSPECT PORTABLE POWER TOOLS	72
J338 INSTALL OR REPLACE DOOR CLOSERS	72
V816 LUBRICATE PORTABLE POWER EQUIPMENT	69
V808 ADJUST SHOP POWER EQUIPMENT	69
J313 CONSTRUCT BATTEN DOORS	69
V811 CLEAN SHOP POWER EQUIPMENT	69
J328 INSTALL OR REPLACE ASPHALT ROOFING SHINGLES	68
I249 INSTALL OR REPLACE DOUBLE TOP PLATES	67
J391 LAYOUT OR CUT CORNICES	67
I267 INSTALL OR REPLACE SUB-FLOORS	65
V812 INSPECT HAND TOOLS	65
J380 INSTALL OR REPLACE VENETIAN BLINDS	64
V814 INSPECT SHOP POWER EQUIPMENT	62
J403 PERFORM ROOF OR TRUSS SCHEDULED INSPECTIONS	62
J407 REPAIR HARDWOOD FLOORING	61
I238 INSTALL OR REPLACE BOX SILLS	61
I230 CONSTRUCT ROUGH SILLS	61

TABLE B3

552X0 AIRMEN  
1-24 MONTHS TAFMS

TASKS	PERCENT MEMBERS PERFORMING
J340 INSTALL OR REPLACE DOOR JAMBS OR STOPS	86
V810 CLEAN PORTABLE POWER TOOLS	84
J320 CUT PLEXI-GLASS TO SPECIFIC DIMENSIONS	80
I236 ERECT EXTERIOR WALLS	79
J339 INSTALL OR REPLACE DOOR HINGES	78
V822 SHARPEN PORTABLE POWER TOOLS	77
J352 INSTALL OR REPLACE INSULATION VAPOR BARRIERS	77
J321 ERECT METAL SCAFFOLDING	77
V807 ADJUST PORTABLE POWER TOOLS	76
J341 INSTALL OR REPLACE DOOR OR WALL LOUVERS	76
J347 INSTALL OR REPLACE SWINGING DOORS	75
J350 INSTALL OR REPLACE HAND RAILS OR BALUSTERS	74
V813 INSPECT PORTABLE POWER TOOLS	74
J311 APPLY PROTECTIVE COATINGS, SUCH AS VARNISH, PAINT, OR STAIN TO EXPOSED EXTERIOR WOOD SURFACES	74
J313 CONSTRUCT BATTEN DOORS	73
V808 ADJUST SHOP POWER EQUIPMENT	71
J338 INSTALL OR REPLACE DOOR CLOSERS	71
V816 LUBRICATE PORTABLE POWER TOOLS	70
V811 CLEAN SHOP POWER EQUIPMENT	69
I249 INSTALL OR REPLACE DOUBLE TOP PLATES	69
I267 INSTALL OR REPLACE SUB-FLOORS	68
J328 INSTALL OR REPLACE ASPHALT ROOFING SHINGLES	68
J391 LAYOUT OR CUT CORNICES	67
V812 INSPECT HAND TOOLS	66
I230 CONSTRUCT ROUGH SILLS	66
J382 INSTALL OR REPLACE WATER TABLES	64
J407 REPAIR HARDWOOD FLOORING	62
V819 REMOVE OR REPLACE PARTS ON PORTABLE POWER EQUIPMENT	62
J380 INSTALL OR REPLACE VENETIAN BLINDS	62
V814 INSPECT SHOP POWER EQUIPMENT	62

TABLE B2

DAFSC 55230/50

TASKS	PERCENT MEMBERS PERFORMING
V810 CLEAN PORTABLE POWER TOOLS	80
J340 INSTALL OR REPLACE DOOR JAMBS OR STOPS	79
J339 INSTALL OR REPLACE DOOR HINGES	74
V822 SHARPEN PORTABLE POWER TOOLS	74
V807 ADJUST PORTABLE POWER TOOLS	73
J341 INSTALL OR REPLACE DOOR OR WALL LOUVERS	73
V813 INSPECT PORTABLE POWER TOOLS	72
J321 ERECT METAL SCAFFOLDING	71
J320 CUT PLEXI-GLASS TO SPECIFIC DIMENSIONS	71
J311 APPLY PROTECTIVE COATINGS, SUCH AS VARNISH, PAINT, OR STAIN TO EXPOSED EXTERIOR WOOD SURFACES	71
J350 INSTALL OR REPLACE HAND RAILS OR BALUSTERS	70
J352 INSTALL OR REPLACE INSULATION VAPOR BARRIERS	70
V816 LUBRICATE PORTABLE POWER TOOLS	69
V808 ADJUST SHOP POWER EQUIPMENT	69
J374 INSTALL OR REPLACE SWINGING DOORS	68
V811 CLEAN SHOP POWER EQUIPMENT	68
J338 INSTALL OR REPLACE DOOR CLOSERS	67
J328 INSTALL OR REPLACE ASPHALT ROOFING SHINGLES	66
J313 CONSTRUCT BATTEN DOORS	65
I249 INSTALL OR REPLACE DOUBLE TOP PLATES	64
V812 INSPECT HAND TOOLS	63
V814 INSPECT SHOP POWER EQUIPMENT	63
J391 LAYOUT OR CUT CORNICES	62
J380 INSTALL OR REPLACE VENETIAN BLINDS	62
I267 INSTALL OR REPLACE SUB-FLOORS	61
J403 PERFORM ROOF OR TRUSS SCHEDULED INSPECTIONS	60
L437 ADJUST PANIC HARDWARE	60
L453 INSTALL OR REPLACE ELECTRIC DOOR LATCHES	59
V819 REMOVE OR REPLACE PARTS ON PORTABLE POWER EQUIPMENT	58

TABLE B1

TOTAL 552X0 SAMPLE

TASKS	PERCENT MEMBERS PERFORMING
V810 CLEAN PORTABLE POWER TOOLS	80
J340 INSTALL OR REPLACE DOOR JAMBS OR STOPS	79
J339 INSTALL OR REPLACE DOOR HINGES	74
V822 SHARPEN PORTABLE POWER TOOLS	74
V807 ADJUST PORTABLE POWER TOOLS	73
J341 INSTALL OR REPLACE DOOR OR WALL LOUVERS	73
V813 INSPECT PORTABLE POWER TOOLS	72
J321 ERECT METAL SCAFFOLDING	71
J320 CUT PLEXI-GLASS TO SPECIFIC DIMENSIONS	71
J311 APPLY PROTECTIVE COATINGS, SUCH AS VARNISH, PAINT, OR STAIN TO EXPOSED EXTERIOR WOOD SURFACES	71
J350 INSTALL OR REPLACE HAND RAILS OR BALUSTERS	70
J352 INSTALL OR REPLACE INSULATION VAPOR BARRIERS	70
I236 ERECT EXTERIOR WALLS	70
V816 LUBRICATE PORTABLE POWER TOOLS	69
V808 ADJUST SHOP POWER EQUIPMENT	69
J374 INSTALL OR REPLACE SWINGING DOORS	68
V811 CLEAN SHOP POWER EQUIPMENT	68
J338 INSTALL OR REPLACE DOOR CLOSERS	67
J328 INSTALL OR REPLACE ASPHALT ROOFING SHINGLES	66
J313 CONSTRUCT BATTEN DOORS	65
I249 INSTALL OR REPLACE DOUBLE TOP PLATES	64
V812 INSPECT HAND TOOLS	63
V814 INSPECT SHOP POWER EQUIPMENT	63
J391 LAYOUT OR CUT CORNICES	62
J380 INSTALL OR REPLACE VENETIAN BLINDS	62
I267 INSTALL OR REPLACE SUB-FLOORS	61
J403 PERFORM ROOF OR TRUSS SCHEDULED INSPECTIONS	60
L437 ADJUST PANIC HARDWARE	60
L453 INSTALL OR REPLACE ELECTRIC DOOR LATCHES	59
V819 REMOVE OR REPLACE PARTS ON PORTABLE POWER EQUIPMENT	58

## APPENDIX B

TABLE A10

## STRUCTURAL PLANNERS

AVERAGE TOTAL ACTIVE FEDERAL MILITARY SERVICE: 137 MONTHS

AVERAGE TOTAL FEDERAL CIVIL SERVICE: 81 MONTHS

MILITARY GROUP MEMBERSHIP: 97%

CIVILIAN GROUP MEMBERSHIP: 3%

TASKS	PERCENT MEMBERS PERFORMING
G196 ESTIMATE QUANTITY OF MATERIALS REQUIRED FOR MASONRY PROJECTS	96
G195 ESTIMATE QUANTITY OF MATERIALS REQUIRED FOR CARPENTRY PROJECTS	91
G199 READ OR INTERPRET MASONRY CONSTRUCTION DRAWINGS	90
E129 MAKE ENTRIES ON AF FORMS 1492 (DANGER)	88
G197 PLAN PROJECTS OR LAY OUT MATERIALS FROM VERBAL INSTRUCTIONS	88
G200 SKETCH WORKING DRAWINGS	87
G193 ESTABLISH TYPES OF MATERIAL REQUIRED FOR MASONRY PROJECTS	86
H201 APPLY OIL TO FORMS PRIOR TO CONCRETE PLACEMENT	86
G194 ESTIMATE MANHOUR REQUIREMENTS	84
E136 MAKE ENTRIES ON AF FORMS 457 (USAF HAZARD REPORT)	83
G198 READ OR INTERPRET CARPENTRY CONSTRUCTION DRAWINGS	83
E145 REVIEW AF FORMS 637 (BCE JOB ORDER LOG)	77
G189 COORDINATE WITH PROJECT REQUESTER ON SITE PLANNING	77
G190 DETERMINE CEMENT STRENGTH REQUIREMENTS	71
C73 SELECT INDIVIDUALS FOR SPECIALIZED TRAINING	68
E148 REVIEW OR POST CONSTRUCTION EQUIPMENT HAULING PERMITS	64
F153 COMPLETE DD FORMS 2090 (GPLD (GOVERNMENT PROPERTY LOST OR DAMAGED) SURVEY CERTIFICATE)	64
E126 MAKE ENTRIES ON AF FORMS 1219 (BCE MULTI-CRAFT JOB ORDER)	58
E134 MAKE ENTRIES ON AF FORMS 3065 (CONTRACT PROGRESS REPORT)	57
E125 MAKE ENTRIES ON AF FORMS 1135 (BCE REAL PROPERTY MAINTENANCE REQUEST)	54
A7 DETERMINE JOB QUALIFICATION STANDARDS (JQS)	52
F155 ESTABLISH ACCOUNTABILITY PROCEDURES FOR SUPPLIES AND EQUIPMENT	45
F182 REVIEW AF FORMS 1919 (WORK CENTER BENCH STOCK AVAILABILITY)	43
C70 INDORSE AIRMAN PERFORMANCE REPORTS (APR)	35
A18 PLAN OR PREPARE BRIEFINGS	33
A12 DEVELOP ORGANIZATIONAL CHARTS	32
C54 EVALUATE COMPLIANCE WITH WORK STANDARDS	32
B42 PREPARE TABLES, GRAPHS, OR DIAGRAMS FOR TECHNICAL REPORTS	32
H221 REMOVE WOODEN OR METAL FORMS	30
A10 DEVELOP OR IMPROVE WORK METHODS OR PROCEDURES	29



TABLE A9

## SUPERVISORY AND ADMINISTRATIVE CLUSTER

AVERAGE TOTAL ACTIVE FEDERAL MILITARY SERVICE: 161 MONTHS

AVERAGE TOTAL FEDERAL CIVIL SERVICE: 237 MONTHS

MILITARY GROUP MEMBERSHIP: 72%

CIVILIAN GROUP MEMBERSHIP: 28%

TASKS	PERCENT MEMBERS PERFORMING
B28 DIRECT DEVELOPMENT OR MAINTENANCE OF STATUS BOARDS, GRAPHS, OR CHARTS	86
A4 COORDINATE INSTALLATION OF CATHODIC PROTECTION SYSTEMS WITH ELECTRICIANS	84
B27 COUNSEL PERSONNEL ON PERSONAL OR MILITARY-RELATED MATTERS	83
C77 WRITE CIVILIAN PERFORMANCE RATINGS	83
A22 PREPARE OR REVIEW UNIT EMERGENCY OR DISASTER PLANS	82
A17 PLAN LAYOUT OF FACILITIES	82
A10 DEVELOP OR IMPROVE WORK METHODS OR PROCEDURES	80
A11 DEVELOP OR UPDATE FACILITY SURVEY SCHEDULES	78
B24 CONDUCT HIRING INTERVIEWS	77
C70 INDORSE AIRMAN PERFORMANCE REPORTS (APR)	77
B47 SUPERVISE MASONRY SPECIALISTS (AFSC 55251)	74
E129 MAKE ENTRIES ON AF FORMS 1492 (DANGER)	73
A2 ASSIGN SPONSORS FOR NEW PERSONNEL	72
B46 SUPERVISE CIVILIANS	70
A3 CONDUCT BRIEFINGS	69
A7 DETERMINE JOB QUALIFICATION STANDARDS (JQS)	68
C71 INVESTIGATE ACCIDENTS OR INCIDENTS	66
A19 PLAN SAFETY PROGRAMS	66
A9 DETERMINE REQUIREMENTS FOR EQUIPMENT, SPACE, OR SUPPLIES	65
B42 PREPARE TABLES, GRAPHS, OR DIAGRAMS FOR TECHNICAL REPORTS	64
C69 IDENTIFY OR REPORT SAFETY HAZARDS	63
F157 ESTABLISH INSPECTION QUALITY STANDARDS FOR REPAIRED ITEMS OR EQUIPMENT	63
F171 MAKE ENTRIES ON AF FORMS 15 (USAF INVOICE)	63
E138 MAKE ENTRIES ON AFTO FORMS 110 AND 110a (TECHNICAL ORDER DISTRIBUTION RECORD)	63
G195 ESTIMATE QUANTITY OF MATERIALS REQUIRED FOR CARPENTRY PROJECTS	63
A20 PLAN SECURITY PROGRAMS	63
B41 PARTICIPATE IN STAFF MEETINGS	63
C50 EVALUATE ACCIDENT REPORTS	61
F155 ESTABLISH ACCOUNTABILITY PROCEDURES FOR SUPPLIES AND EQUIPMENT	60
F166 ISSUE NONACCOUNTABLE SUPPLIES	60

TABLE A8

## MASONRY CLUSTER

AVERAGE TOTAL ACTIVE FEDERAL MILITARY SERVICE: 68 MONTHS

AVERAGE TOTAL FEDERAL CIVIL SERVICE: 155 MONTHS

MILITARY GROUP MEMBERSHIP: 73%

CIVILIAN GROUP MEMBERSHIP: 27%

TASKS	PERCENT MEMBERS PERFORMING
0574 MIX MORTAR USING MORTAR MIXER	95
0562 DETERMINE SIZE OF AGGREGATE USED IN CONCRETE MIXES	93
P656 WET SUBGRADE PRIOR TO PLACING CONCRETE	91
V810 CLEAN PORTABLE POWER TOOLS	90
P627 INSPECT CONCRETE FOR DEFECTS SUCH AS CRACKS, SCALING, SPALLS, POPOUTS, HONEYCOMBS, OR SETTLEMENT	89
0559 CALCULATE RATIO MIXTURE FOR PLASTER COATING	89
R715 REMOVE BROKEN QUARRY TILES	89
P622 DRILL HOLES IN CONCRETE WITH HAND DRILLS	89
Q662 CHECK LEVEL OF BLOCK, BRICK, OR STRUCTURAL TILE CONSTRUCTION USING STRINGS	88
P626 FLOAT CONCRETE	88
0558 CALCULATE RATIO MIXTURE FOR MORTAR	88
R703 CUT AND SHAPE CERAMIC OR QUARRY TILES USING POWER EQUIPMENT	88
R713 PREPARE GROUT FOR QUARRY TILES	88
P636 PLACE REINFORCING STEEL IN COLUMNS	86
R698 APPLY NEAT COAT TO PLASTER WALLS FOR CERAMIC TILES	86
P647 SEAL JOINTS OR SURFACE CRACKS IN MASONRY	86
Q660 CHECK ALIGNMENT OF BLOCK, BRICK, OR STRUCTURAL TILE CONSTRUCTION USING OTHER THAN STRAIGHT EDGES	86
P634 PATCH OR REPAIR CONCRETE USING EPOXY FILLERS	85
Q686 PLUMB BLOCK, BRICK, OR STRUCTURAL TILE WALLS	85
P629 INSTALL EXPANSION OR CONTRACTION JOINTS	84
Q694 STRIKE LINE FOR LAYING BLOCKS, BRICKS, OR STRUCTURAL TILES	84
V813 INSPECT PORTABLE POWER TOOLS	83
Q673 CUT BLOCKS, BRICKS, OR STRUCTURAL TILES USING MASONRY SAWS	83
0577 MIX PLASTER USING MORTAR MIXER FOR ROUGH COAT	83
R702 CUT AND SHAPE CERAMIC OR QUARRY TILES USING HAND TOOLS	83
0560 CALCULATE RATIO MIXTURE FOR STUCCO	82
Q663 CHECK MORTAR JOINTS FOR PROPER THICKNESS USING STORY POLES	81
P648 SURFACE CONCRETE USING HAND TOOLS	81
S754 REMOVE LOOSE STUCCO	81
S756 SCARIFY BROWN COATS	80

TABLE A7

## ROOFING PERSONNEL

AVERAGE TOTAL ACTIVE FEDERAL MILITARY SERVICE: 69 MONTHS

AVERAGE TOTAL FEDERAL CIVIL SERVICE: 112 MONTHS

MILITARY GROUP MEMBERSHIP: 26%

CIVILIAN GROUP MEMBERSHIP: 74%

TASKS	PERCENT MEMBERS PERFORMING
J401 PATCH BUILT-UP ROOFING BY HOT METHOD	97
J400 PATCH BUILT-UP ROOFING BY COLD METHOD	95
J365 INSTALL OR REPLACE SCREENS ON METAL DOOR OR WINDOW FRAMES	92
J398 OVERLAY ASPHALT ROOFING SHINGLES	92
J399 OVERLAY ROLLED ROOFING	92
J324 INSTALL FURRING STRIPS IN OTHER THAN DISPLAY VANS	89
J402 PATCH HOLES IN GYPSUM BOARD	89
J405 REMOVE SCAFFOLDING	84
J329 INSTALL OR REPLACE BATTEN DOORS	82
J326 INSTALL OR REPLACE ASBESTOS CEMENT SHINGLES ON EXTERIOR WALLS	76
V810 CLEAN PORTABLE POWER TOOLS	71
J368 INSTALL OR REPLACE SLATE ROOFING	68
J349 INSTALL OR REPLACE GYPSUM BOARD	66
J337 INSTALL OR REPLACE DOOR CLOSER COMPONENTS	61
J358 INSTALL OR REPLACE METAL SIDING	58
V822 SHARPEN PORTABLE POWER TOOLS	55
V811 CLEAN SHOP POWER EQUIPMENT	47
V813 INSPECT PORTABLE POWER TOOLS	47
V807 ADJUST PORTABLE POWER TOOLS	47
V808 ADJUST SHOP POWER EQUIPMENT	47
V819 REMOVE OR REPLACE PARTS ON PORTABLE POWER EQUIPMENT	45
J369 INSTALL OR REPLACE SLIDING DOOR TRACKS OR ROLLERS	42
J347 INSTALL OR REPLACE EXTERIOR SLIDING DOORS	42
J404 PERFORM TAR KETTLE OPERATOR MAINTENANCE	42
J313 CONSTRUCT BATTEN DOORS	42
J327 INSTALL OR REPLACE ASPHALT OR VINYL FLOOR TILES	42
I246 INSTALL OR REPLACE CORNER POSTS	42
J389 INSTALL OR REPLACE WOODEN SIDING SHINGLES	39
J331 INSTALL OR REPLACE BUILDING PAPER	39
V816 LUBRICATE PORTABLE POWER TOOLS	39

TABLE A6  
SHOP PERSONNEL

AVERAGE TOTAL ACTIVE FEDERAL MILITARY SERVICE: 88 MONTHS  
 AVERAGE TOTAL FEDERAL CIVIL SERVICE: 173 MONTHS  
 MILITARY GROUP MEMBERSHIP: 54%  
 CIVILIAN GROUP MEMBERSHIP: 46%

TASKS	PERCENT MEMBERS PERFORMING
V808 ADJUST SHOP POWER EQUIPMENT	99
V810 CLEAN PORTABLE POWER TOOLS	97
V812 INSPECT HAND TOOLS	96
V807 ADJUST PORTABLE POWER TOOLS	96
V811 CLEAN SHOP POWER EQUIPMENT	94
V816 LUBRICATE PORTABLE POWER TOOLS	94
V814 INSPECT SHOP POWER EQUIPMENT	94
V813 INSPECT PORTABLE POWER TOOLS	94
V809 CLEAN HAND TOOLS	93
V815 LUBRICATE HAND TOOLS	91
V818 REMOVE OR REPLACE PARTS ON HAND TOOLS	91
V817 LUBRICATE SHOP POWER EQUIPMENT	91
V819 REMOVE OR REPLACE PARTS ON PORTABLE POWER EQUIPMENT	87
V822 SHARPEN PORTABLE POWER TOOLS	84
V820 REMOVE OR REPLACE PARTS ON SHOP POWER EQUIPMENT	83
V821 SHARPEN HAND TOOLS	81
K417 CONSTRUCT STORAGE BINS	80
K416 CONSTRUCT PICTURE FRAMES	68
J321 ERECT METAL SCAFFOLDING	67
K414 CONSTRUCT CHAIRS OR BENCHES	65
K430 REMOVE OR REPLACE CABINET DRAWERS, HINGES, OR KNOBS	64
K413 CONSTRUCT CABINETS OR CABINET DOORS	64
V823 SHARPEN SHOP POWER EQUIPMENT	62
J320 CUT PLEXI-GLASS TO SPECIFIC DIMENSIONS	61
V824 TURN IN BLADES FOR MAGNA-FLUX INSPECTION	59
K418 CONSTRUCT TABLES	59
K419 CONSTRUCT WALL OR CORNER SHELVES	59
K423 INSTALL OR REPLACE CARPETING	57
K431 REMOVE OR REPLACE CLOSET SHELVES OR RODS	55
K425 INSTALL STORAGE BINS	54

TABLE C4

552X1 AIRMEN  
1-48 MONTHS TAFMS

TASKS	PERCENT MEMBERS PERFORMING
V810 CLEAN PORTABLE POWER TOOLS	89
O574 MIX MORTAR USING MORTAR MIXER	89
O562 DETERMINE SIZE OF AGGREGATE USED IN CONCRETE MIXES	86
P656 WET SUBGRADE PRIOR TO PLACING CONCRETE	83
R715 REMOVE BROKEN QUARRY TILES	81
R713 PREPARE GROUT FOR QUARRY TILES	81
P627 INSPECT CONCRETE FOR DEFECTS SUCH AS CRACKS, SCALING, SPALLS, POPOUTS, HONEYCOMBS, OR SETTLEMENT	81
Q662 CHECK LEVEL OF BLOCK, BRICK, OR STRUCTURAL TILE CONSTRUCTION USING STRINGS	80
P622 DRILL HOLES IN CONCRETE WITH HAND DRILLS	79
O559 CALCULATE RATIO MIXTURE FOR PLASTER COATING	79
O577 MIX PLASTER USING MORTAR MIXER FOR ROUGH COAT	78
P626 FLOAT CONCRETE	78
R698 APPLY NEAT COAT TO PLASTER WALLS FOR CERAMIC TILES	77
P634 PATCH OR REPAIR CONCRETE USING EPOXY FILLERS	77
Q660 CHECK ALIGNMENT OF BLOCK, BRICK, OR STRUCTURAL TILE CONSTRUCTION USING OTHER THAN STRAIGHT EDGES	77
O558 CALCULATE RATIO MIXTURE FOR MORTAR	77
V813 INSPECT PORTABLE POWER TOOLS	76
R703 CUT AND SHAPE CERAMIC OR QUARRY TILES USING POWER EQUIPMENT	76
Q686 PLUMB BLOCK, BRICK, OR STRUCTURAL TILE WALLS	76
R702 CUT AND SHAPE CERAMIC OR QUARRY TILES USING HAND TOOLS	76
P636 PLACE REINFORCING STEEL IN COLUMNS	74
P647 SEAL JOINTS OR SURFACE CRACKS IN MASONRY	74
Q694 STRIKE LINE FOR LAYING BLOCKS, BRICKS, OR STRUCTURAL TILES	74
S754 REMOVE LOOSE STUCCO	73
Q673 CUT BLOCKS, BRICKS, OR STRUCTURAL TILES USING MASONRY SAWS	73
O560 CALCULATE RATIO MIXTURE FOR STUCCO	72
P648 SURFACE CONCRETE USING HAND TOOLS	71
P629 INSTALL EXPANSION OR CONTRACTION JOINTS	71
P628 INSTALL ANCHOR BOLTS OR FASTENING DEVICES	70
Q690 REPOINT BLOCK OR BRICK MORTAR JOINTS	69

APPENDIX D

TABLE D1

TOTAL 55273 SAMPLE

TASKS	PERCENT MEMBERS PERFORMING
C77 WRITE CIVILIAN PERFORMANCE RATINGS	69
B28 DIRECT DEVELOPMENT OR MAINTENANCE OF STATUS BOARDS, GRAPHS, OR CHARTS	68
B27 COUNSEL PERSONNEL ON PERSONAL OR MILITARY-RELATED MATTERS	60
D105 MAKE ENTRIES ON AF FORMS 797 (JOB QUALIFICATION STANDARD CONTINUATION)	56
B46 SUPERVISE CIVILIANS	55
E129 MAKE ENTRIES ON AF FORMS 1492 (DANGER)	55
G199 READ OR INTERPRET MASONRY CONSTRUCTION DRAWINGS	55
C70 INDORSE AIRMAN PERFORMANCE REPORTS (APR)	55
A4 COORDINATE INSTALLATION OF CATHODIC PROTECTION SYSTEMS WITH ELECTRICIANS	54
A10 DEVELOP OR IMPROVE WORK METHODS OR PROCEDURES	54
G196 ESTIMATE QUANTITY OF MATERIALS REQUIRED FOR MASONRY PROJECTS	52
A22 PREPARE OF REVIEW UNIT EMERGENCY OR DISASTER PLANS	52
A11 DEVELOP OR UPDATE FACILITY SURVEY SCHEDULES	52
V813 INSPECT PORTABLE POWER TOOLS	52
G193 ESTABLISH TYPES OF MATERIAL REQUIRED FOR MASONRY PROJECTS	50
H201 APPLY OIL TO FORMS PRIOR TO CONCRETE PLACEMENT	50
G195 ESTIMATE QUANTITY OF MATERIALS REQUIRED FOR CARPENTRY PROJECTS	49
A7 DETERMINE JOB QUALIFICATION STANDARDS (JQS)	49
A17 PLAN LAYOUT OF FACILITIES	49
V814 INSPECT SHOP POWER EQUIPMENT	48
D83 CONDUCT RESIDENT COURSE CLASSROOM TRAINING	48
G198 READ OR INTERPRET CARPENTRY CONSTRUCTION DRAWINGS	47
B24 CONDUCT HIRING INTERVIEWS	46
C71 INVESTIGATE ACCIDENTS OR INCIDENTS	45
V810 CLEAN PORTABLE POWER TOOLS	45
E134 MAKE ENTRIES ON AF FORMS 3065 (CONTRACT PROGRESS REPORT)	45
B42 PREPARE TABLES, GRAPHS, OR DIAGRAMS FOR TECHNICAL REPORTS	44
V822 SHARPEN PORTABLE POWER TOOLS	43
A2 ASSIGN SPONSORS FOR NEW PERSONNEL	43
V807 ADJUST PORTABLE POWER TOOLS	43

TABLE D2

55273 AIRMEN  
49-96 MONTHS TAFMS

TASKS	PERCENT MEMBERS PERFORMING
V813 INSPECT PORTABLE POWER TOOLS	67
V810 CLEAN PORTABLE POWER TOOLS	67
V807 ADJUST PORTABLE POWER TOOLS	61
V814 INSPECT SHOP POWER EQUIPMENT	61
V811 CLEAN SHOP POWER EQUIPMENT	61
V822 SHARPEN PORTABLE POWER TOOLS	59
V808 ADJUST SHOP POWER EQUIPMENT	59
G196 ESTIMATE QUANTITY OF MATERIALS REQUIRED FOR MASONRY PROJECTS	57
C77 WRITE CIVILIAN PERFORMANCE RATINGS	57
B27 COUNSEL PERSONNEL ON PERSONAL OR MILITARY-RELATED MATTERS	57
J339 INSTALL OR REPLACE DOOR HINGES	54
V816 LUBRICATE PORTABLE POWER TOOLS	54
V819 REMOVE OR REPLACE PARTS ON PORTABLE POWER EQUIPMENT	54
G199 READ OR INTERPRET MASONRY CONSTRUCTION DRAWINGS	52
B46 SUPERVISE CIVILIANS	52
J340 INSTALL OR REPLACE DOOR JAMBS OR STOPS	52
B28 DIRECT DEVELOPMENT OR MAINTENANCE OF STATUS BOARDS, GRAPHS, OR CHARTS	52
J320 CUT PLEXI-GLASS TO SPECIFIC DIMENSIONS	50
V812 INSPECT HAND TOOLS	50
J350 INSTALL OR REPLACE HAND RAILS OR BALUSTERS	50
J352 INSTALL OR REPLACE INSULATION VAPOR BARRIERS	50
D105 MAKE ENTRIES ON AF FORMS 797 (JOB QUALIFICATION STANDARD CONTINUATION)	50
J341 INSTALL OR REPLACE DOOR OR WALL LOUVERS	50
H201 APPLY OIL TO FORMS PRIOR TO CONCRETE PLACEMENT	48
J374 INSTALL OR REPLACE SWINGING DOORS	48
J311 APPLY PROTECTIVE COATINGS, SUCH AS VARNISH, PAINT, OR STAIN TO EXPOSED EXTERIOR WOOD SURFACES	48
C70 INDORSE AIRMAN PERFORMANCE REPORTS (APR)	48
J313 CONSTRUCT BATTEN DOORS	48
G198 READ OR INTERPRET CARPENTRY CONSTRUCTION DRAWINGS	46
J321 ERECT METAL SCAFFOLDING	46

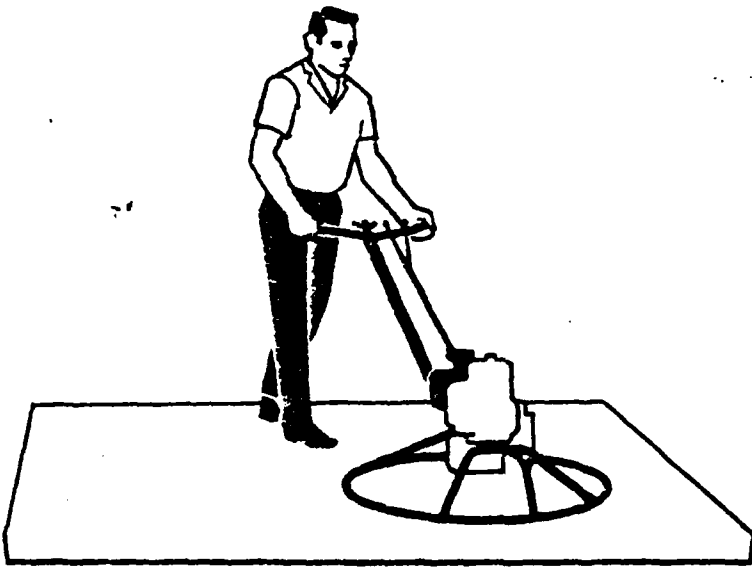


TABLE D3  
55273 AIRMEN  
97+ MONTHS TAFMS

TASKS	PERCENT MEMBERS PERFORMING
C77 WRITE CIVILIAN PERFORMANCE RATINGS	71
B28 DIRECT DEVELOPMENT OR MAINTENANCE OF STATUS BOARDS, GRAPHS, OR CHARTS	71
B27 COUNSEL PERSONNEL ON PERSONAL OR MILITARY-RELATED MATTERS	60
E129 MAKE ENTRIES ON AF FORMS 1492 (DANGER)	57
D105 MAKE ENTRIES ON AF FORMS 797 (JOB QUALIFICATION STANDARD CONTINUATION)	57
A10 DEVELOP OR IMPROVE WORK METHODS OR PROCEDURES	57
A4 COORDINATE INSTALLATION OF CATHODIC PROTECTION SYSTEMS WITH ELECTRICIANS	56
B46 SUPERVISE CIVILIANS	56
C70 INDORSE AIRMAN PERFORMANCE REPORTS (APR)	56
G199 READ OR INTERPRET MASONRY CONSTRUCTION DRAWINGS	56
A22 PREPARE OR REVIEW UNIT EMERGENCY OR DISASTER PLANS	55
A11 DEVELOP OR UPDATE FACILITY SURVEY SCHEDULES	54
G196 ESTIMATE QUANTITY OF MATERIALS REQUIRED FOR MASONRY PROJECTS	52
A17 PLAN LAYOUT OF FACILITIES	52
G195 ESTIMATE QUANTITY OF MATERIALS REQUIRED FOR CARPENTRY PROJECTS	51
G193 ESTABLISH TYPES OF MATERIAL REQUIRED FOR MASONRY PROJECTS	51
A7 DETERMINE JOB QUALIFICATION STANDARDS (JQS)	51
H201 APPLY OIL TO FORMS PRIOR TO CONCRETE PLACEMENT	51
B24 CONDUCT HIRING INTERVIEWS	49
C71 INVESTIGATE ACCIDENTS OR INCIDENTS	49
D83 CONDUCT RESIDENT COURSE CLASSROOM TRAINING	49
V813 INSPECT PORTABLE POWER TOOLS	49
B42 PREPARE TABLES, GRAPHS, OR DIAGRAMS FOR TECHNICAL REPORTS	48
G198 READ OR INTERPRET CARPENTRY CONSTRUCTION DRAWINGS	47
E134 MAKE ENTRIES ON AF FORMS 3065 (CONTRACT PROGRESS REPORT)	47
A2 ASSIGN SPONSORS FOR NEW PERSONNEL	46
V814 INSPECT SHOP POWER EQUIPMENT	46
A3 CONDUCT BRIEFINGS	45
B47 SUPERVISE MASONRY SPECIALISTS (AFSC 55251)	44
B44 SUPERVISE APPRENTICE MASONRY SPECIALISTS (AFSC 55231)	43

## APPENDIX E

**JOB GRADING STANDARD FOR**  
**CEMENT FINISHER**  
**WG-3602**



**U.S. CIVIL SERVICE COMMISSION**  
**BUREAU OF POLICIES AND STANDARDS**

**TS-10 JANUARY 1970**  
**FPM SUPPLEMENT 512-1**



WG-3602

CEMENT FINISHER

WG-3602

COVERAGE OF STANDARD

This standard is used to grade all nonsupervisory jobs involved in construction and repair of cement and concrete surfaces and structures.

TITLES

Jobs covered by this standard at and above the WG-8 level are to be titled *Cement Finisher*.

Jobs covered by this standard below the WG-8 level are to be titled *Cement Worker*.

GRADE LEVELS

This standard does not describe all possible levels at which jobs might be established. If jobs differ substantially from the skill, knowledge, and other work requirements described in the grade levels of the standard, they may warrant grading either above or below those grades.

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U.S. CIVIL SERVICE COMMISSION

Cement Worker, WG-6

WG-3602-6

The WG-6 Cement Worker receives assignments from a grade worker or supervisor in the form of oral or written instructions on the mixing, pouring, spreading, and leveling of concrete surfaces and structures. These instructions specify work to be done and material and methods to be used in finishing the work.

He works on such surfaces as sidewalks, steps, walls, curbs, ramps, and runways. He builds and sets forms on projects of limited difficulty such as sidewalks and steps which do not require precise measurements and involve only the setting of forms and straight lines. He mixes, pours, spreads, and levels cement and concrete in preparation for final finishing. In repairing damaged concrete, he removes broken concrete and prepares subsurfaces.

**Knowledge:** At this level, the cement worker must have knowledge of the methods and techniques of cement work. In repairing damaged areas, he must have the ability to remove concrete and to prepare subsurface for repair including grading and tamping fill material, such as sand, dirt, or gravel. He must be able to mix and prepare concrete in accordance with specifications, insuring that the proper amount of cement, sand, and water are used and that proper consistency is achieved. He must have the ability to pour concrete into forms and to level concrete. He must be able to perform rough finish on all areas.

The Cement Worker must be skilled in use of a variety of tools in addition to the trade. He must be able to use a concrete paving machine, pneumatic hammer, and concrete saw to remove broken concrete. He must be able to use a straight edge, trowel, screed, and float to level concrete. He must have the ability to use a hand saw when building or disassembling forms. He must be able to operate a cement mixer. He must have the ability to use a vibrator to eliminate defects caused by bubbles and hollow

**Ability:** A higher grade worker or supervisor assigns work through written work orders. The WG-6 Cement Worker obtains tools and material as required by instructions. On small jobs, he proceeds to complete assigned tasks in accordance

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January 1970

## JOB GRADING SYSTEM

3602-6

WG-3602-6

h instructions. When working as a member of a crew, he receives necessary instructions from a higher grade worker who is available for guidance and assistance. His work is subject to checking progress for conformance with instructions and completed work is checked for acceptability.

*Physical Effort:* The WG-6 Cement Worker is frequently required to perform heavy lifting up to 100 pounds while carrying cement and other equipment and materials. His work normally requires extensive standing, walking, kneeling and bending.

*Working Conditions:* The WG-6 Cement Worker works both inside and outside. He is frequently exposed to dust and dirt while mixing concrete.

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3602-8

Cement Finisher, WG-8

WG-3602-8

*General:* The work at this grade, in addition to work done at the WG-6 level, involves the final finishing of cement and concrete, work on difficult projects, requiring more precise measurements and setting forms in curved as well as straight lines.

In comparison with the WG-6 level, the WG-8 Cement Finisher also must have a more comprehensive knowledge of the cement finishing operation to plan work methods and sequences, lay out the work to be done, determine materials to be used, select proper tools, and accomplish the job in accordance with appropriate methods and accepted trade practices.

The WG-8 Cement Finisher works from oral instructions, blueprints, work orders, and rough sketches. The supervisor checks his work only to see that it meets accepted trade standards.

*Skills and Knowledge:* In comparison with the WG-6 level, the WG-8 Cement Finisher must have a more comprehensive knowledge of the work methods, sequences, and techniques of cement work. He must have the ability to assemble and set forms to meet precise job specifications in accordance with type and shape of structures and material. The WG-8 Cement Finisher must know when to determine when to use reinforcement steel or wire and must be able to install and arrange reinforcement material to obtain maximum strength. He must know when cement is sufficiently cured to eliminate bubbles. He must have a thorough knowledge of the properties and characteristics of materials in order to determine proper mixtures and setting time.

In addition to work requirements at the WG-6 level, he must know how to accomplish preliminary and final finishing. He must be able to finish surfaces to specified desired finish and texture by such methods as rubbing with abrasive stone or applying a smooth coat of cement mortar. He must know how to apply special friction finishes. He must have the ability to apply special cement mixtures to walls to obtain desired finish or waterproofing. He must be able to perform finishing work such as rolling curbs and shaping drain areas.

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January 1970

## JOB GRADING SYSTEM

3602-8

WG-3602-8

In addition to the kinds of applications described at the WG-6 level, WG-8 Cement Finisher must be skilled in use of floats, edgers, leveling machines, abrasives, and other cement finishing tools in forming final finishing and in shaping curbs and drains to proper grade and contour. On occasions, he may be required to use mud pump or mud jack machine to raise sunken portions of road runway.

**Responsibility:** At this level, the cement finisher receives assignments from his supervisor either orally or through written work orders. In comparison with the WG-6 level, the WG-8 Cement Finisher has greater responsibility in reviewing work to be done, interpreting blueprints or sketches, determining work methods and sequences needed to complete work, selecting materials, and determining from specifications what is required in regard to the use of cement and the strength of the composition. Finished work is checked only to see that it meets accepted trade standards.

**Physical Effort:** The physical effort is similar to that described at WG-6 level.

**Working Conditions:** The working conditions are similar to those described at the WG-6 level.

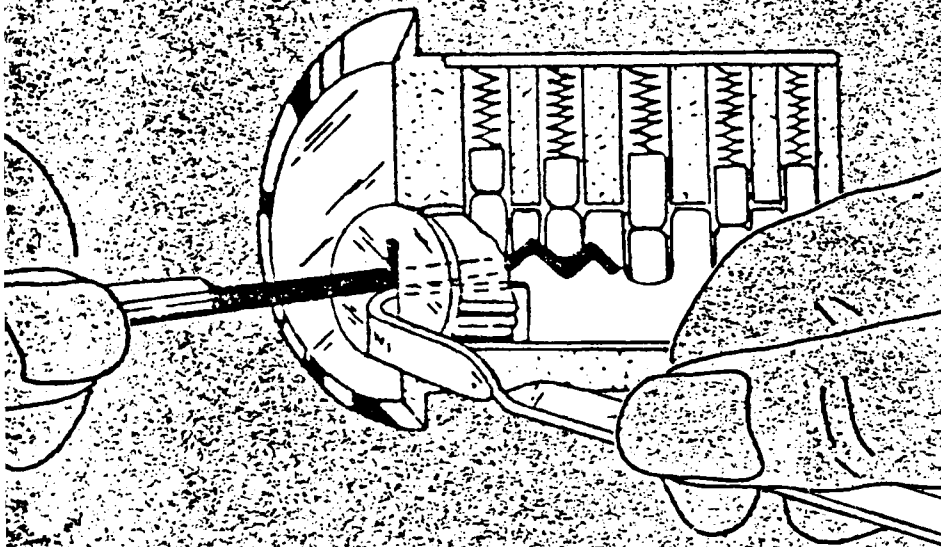


JOB GRADING STANDARD FOR

# LOCKSMITH

~~5311~~

3817



U.S. Civil Service Commission  
Bureau of Policies and Standards

TS-35 May 1977  
FPM Supplement 512-1

## LOCKSMITH

5311

### COVERAGE OF STANDARD

Standard covers nonsupervisory work involved in repairing, installing, modifying, testing, and installing a variety of locking devices typically found on doors, desks, compartments, mobile equipment, safes, vaults, and other secured locations. The work includes manufacture and duplication of keys and the keying and combination setting of locking mechanisms.

Work requires a knowledge of the construction, operation, and mechanical characteristics of locking devices, and skill in manufacturing replacement parts, devising or changing combinations, establishing master keying systems, neutralizing lockouts, and a variety of installation and repair processes such as filing, drilling, chiseling, and grinding.

### WORK NOT COVERED

Standard does not cover the following work:

- that are primarily responsible for maintenance and repair of electronic equipment such as electronic keying devices, burglar alarms and surveillance systems. (See Electrical Equipment Repair Series, 2854, Wire Communications Equipment Installation and Repairing Series, 2511, or other appropriate series);
- primarily involved in assuring that the systems, devices, and methods used for safeguarding information and/or material affecting the national security are effective where a knowledge of a wide range of protective devices, facilities, security procedures and methods is required (i.e., conducting physical security surveys in order to determine the number and kinds of safes, alarms, locks, etc. needed for restricted areas). (See Position Classification Standard for Security Administration, GS-080);
- that are primarily responsible for the adjustment, maintenance and repair of door closer devices. (See Door Closer Repair Series, 5364);

AD-A157 145

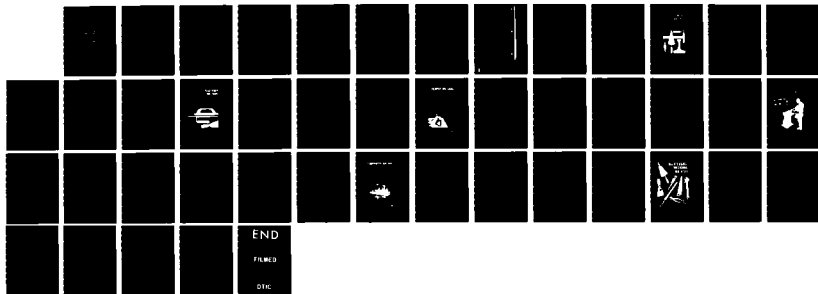
CARPENTRY AND MASONRY CAREER LADDERS AFSCS  
552X0/552X1/55273(U) AIR FORCE OCCUPATIONAL MEASUREMENT  
CENTER RANDOLPH AFB TX JAN 85

2/2

UNCLASSIFIED

F/G 5/9

NL





MICROCOPY RESOLUTION TEST CHART  
NATIONAL BUREAU OF STANDARDS-1963-A

UNITED STATES CIVIL SERVICE COMMISSION

5311

5311

—Jobs that are primarily responsible for the adjustment, maintenance and repair of timing mechanisms. (See Timekeeping Instrument Repairing Series, 3309).

TITLES

Jobs covered by this standard below the grade 8 level are to be titled *Locksmith Worker*.

Jobs covered by this standard at grade 8 and above are to be titled *Locksmith*.

GRADE LEVELS

This standard does not cover all possible levels at which jobs may be established. If jobs differ substantially from the skill, knowledge, or other work requirements described in the grade levels of this standard, they may warrant grading either above or below these grades based on the application of sound job grading methods.

NOTE TO USERS

Because of previous agency practices, "modification of locking devices" has acquired a wide range of meanings from simple recombining of locks to complete reworking of parts, components, etc., for special security reasons. For the purposes of this standard, "modification" means major reworking of the devices to solve special locking problems which may involve experimentation with a variety of materials, parts shapes, and fabrication techniques. "Modification" does *not* mean work described at the grade 7 and 8 levels under the Skill and Knowledge factors involving rekeying and recombining locks, making minor alterations to locks for installation purposes, or substituting, per agency instructions, premanufactured parts designed for the specific type and model of lock being serviced.

## JOB GRADING SYSTEM

5311-7

Locksmith Worker, Grade 7

5311-7

*General:* The grade 7 Locksmith Workers perform routine maintenance, overhaul, and repair of standard types of mechanical locking devices such as mortise, rim, key-in-the-knob, deadbolt, office equipment, padlocks, and emergency exit locks. The locks serviced at this level usually contain limited numbers of parts and components with few operating relationships which would complicate the troubleshooting and repair processes.

Work assignments at this level, for example, involve opening locks when keys are missing, removing broken keys from keyways, disassembling, performing operational checks, visually checking parts for wear and defects, cleaning and replacing parts, reassembling, and reinstalling locking devices. Additionally, the work at this level typically includes installation of locking mechanisms in doors, office equipment, safes, etc., and recombining or rekeying of locking devices.

The Locksmith Workers complete the assigned tasks using a variety of tools and equipment common to the trade. They apply standard work practices and techniques and work within the framework of guidelines and instructions.

*Skill and Knowledge:* Grade 7 Locksmith Workers apply a knowledge of the internal structure and operating characteristics to repair and maintain a variety of standard mechanical locking devices. They perform visual and operational checks to locate source of trouble and determine the best method for opening malfunctioning locking devices. They must have good dexterity and coordination between hands and eyes to remove broken keys from keyways and open standard locks when keys are missing by such methods as picking, shimmiing, spreading, and slipping. They disassemble items and perform visual checks to detect worn or damaged parts, i.e., broken springs, jammed pins, bent discs, broken tail pieces, rust and corrosion. They lubricate and clean parts with appropriate lubricants and solvents, straighten bent parts, smooth burrs and scratches, replace defective parts, reassemble, perform operational tests, and reinstall the locking devices. They must be familiar with manufacturer parts catalogs and assembly instructions to obtain replacement parts and make repairs. They are skilled in keying and rekeying locks by using addition, subtraction, multiplication, and division to determine whether to add, remove, or shorten various sizes of tumblers, i.e., pins, discs, levers. They must also be

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familiar with a variety of key blanks in order to duplicate or make new keys to fit the locks by code, impression or duplicating machine. They use micrometers to measure depths of cuts and pin sizes. They also have a basic knowledge of the construction of combination-type locking devices in order to change the combination by key or manually by disassembling, changing the position of tumbler centers, and re-assembling.

In addition, Locksmith Workers at this level are skilled in the installation of locking devices in doors, desks, office equipment, safes and other units using templates and in making necessary minor alterations to locking mechanisms and units to assure correct fit. For example, they replace escutcheon and face plates on doors to change the size of the existing holes; measure and cut off excess dial spindles; change position of spline key in the drive cam to reverse lock case direction in door. They must have a basic knowledge of various types of woods and metals in order to select appropriate tools and equipment such as hammers, chisels, jigs, hand drills and bits.

Locksmith Workers at this level are skilled in the use of small hand tools such as files, picks, tweezers, tension wrenches, as well as the adjustment and use of powered tools common to the trade such as key duplicating and coding machines, grinders and buffers, and stamping machines.

**Responsibility:** Grade 7 Locksmith Workers receive oral and written work orders from the supervisor. On routine assignments, they independently apply standard trade practices in installing, disassembling and replacing worn or damaged parts, rekeying and recombining locking mechanisms. They select tools and technical diagrams and manuals, determine work sequence, and obtain parts necessary to complete repairs. The supervisor or a higher graded worker is available to assist with problems which cause deviation from standard work practices. Completed work is reviewed by the user for accomplishing satisfactory results or by the supervisor or a higher graded worker for adherence to standard trade practices.

**Physical Effort:** Work at this level seldom requires lifting or carrying of items weighing in excess of 15 lbs. The Locksmith Workers frequently stand, stoop, bend, kneel and work in awkward positions

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## JOB GRADING SYSTEM

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when installing and opening locks and emergency exit hardware on-site.

*Working Conditions:* Work at this level is normally done inside in areas that are well lighted, heated and ventilated. Occasionally work is done outside in bad weather or in areas that are drafty and poorly lighted. The Locksmith Workers are exposed to the possibility of cuts, scrapes and bruises.



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5311-8

Locksmith, Grade 8

5311-8

*General:* In comparison with the routine repair of a limited range of locking devices at the grade 7 level, the grade 8 Locksmiths adjust, troubleshoot, repair and install a wider variety of commercially manufactured locking devices including combination locks which are typically installed in such security units as safes, vaults, cabinets, and chests. Unlike the limited function locks described at the grade 7 level, these devices contain such features as dual locking capabilities, and they interact mechanically with timing mechanisms, other combination locks or actuating mechanisms, and security container locking bolts. Troubleshooting is complicated by the necessity to determine which of the components comprising the locking system of the security unit is malfunctioning.

The grade 8 Locksmiths perform the full repair cycle of locating trouble, disassembly, repair, cleaning, reassembly, and reinstallation of a wide variety of makes and models of locking devices in addition to those shown at the grade 7 level. They independently plan techniques to be used and apply judgment in the selection of tools and accepted trade practices to troubleshoot and neutralize lockouts. They make operational tests to determine the extent and location of malfunctions, repair, replace or fabricate defective parts. In addition, some Locksmiths at this level establish master key coding systems.

The Locksmiths must use judgment in the selection from a greater variety of applicable guidelines, manuals, etc., than grade 7 Locksmith Workers. Locksmiths at this level typically receive no technical supervision, whereas grade 7 Locksmith Workers can refer problems to higher graded workers or their supervisor.

*Skill and Knowledge:* The grade 8 Locksmiths apply a thorough knowledge of the internal structure and operating characteristics of a wide range of makes, models and types of common mechanical locking mechanisms and of their working interrelationships with related components comprising the locking system of the security units in which they are installed in order to select methods used in neutralizing, troubleshooting and repairing the locking mechanisms. Troubleshooting at this level is more complicated than at the 7 level since the locking devices are typically connected to locking bolts within the container, other combination locks and/or are activated by timing mechanisms

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and the Locksmiths, in the case of lockouts caused by defective parts, determine through operational tests which of the components is malfunctioning. They apply sound judgment in the selection of commonly used neutralization techniques. Based upon knowledge of points of least resistance of the locking mechanisms and/or containers, they determine precise locations and angles for drilling and/or burning without harming the contents or causing irrevocable damage to the locking mechanisms or the containers. Depending upon what is malfunctioning, they may aim for safe relocking devices, lock fence removal, lock lever screw removal, lock trigger removal or locking bolt work removal. They have a knowledge of a variety of metals in order to select the drill bits or torches to be used in neutralizing the lockouts.

At this level, Locksmiths are skilled in the manipulation of combination locks as well as picking key locks. They determine the number of wheel tumblers, locate and plot contact point readings on graphs, and determine true centers using a developed sense of "feel" and hearing aids such as stethoscopes to amplify sounds within the lock case.

At this level, Locksmiths perform the full repair cycle of locating trouble, disassembly, repair, replacement or fabrication of parts, cleaning, reassembly, and reinstallation of a wide range of commercially manufactured locking devices as well as locking bolts. They independently interpret and apply technical manuals, manufacturers diagrams and specifications while repairing and testing the locking mechanisms. Unlike Locksmith Workers, they are skilled in soldering or brazing broken locking parts together, reshaping parts by grinding and filing, fabricating parts when they are not available in stock, such as fences, dial posts, rings, spacers, and spline keys by sawing, filing and grinding stock metal. They may also machine parts such as locking bolts and special sized screws using bench lathes and drill presses. Upon repair of the lock, they may inform personnel in other trades or shops, i.e., welders or painters of the need for their services in restoring containers to their original condition or perform such work themselves as an incidental duty.

In addition to the knowledges described above, many Locksmiths have a knowledge of master key systems in order to set up coding systems involving varying types of locks and keyways. They refer to manuals

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to insure that various keyways are compatible and to building blueprints to determine the total number of locks and those which can be keyed alike. They are able to use arithmetic to set up the coding system and to select the correct size of pins.

Grade 8 Locksmiths are skilled in the adjustment, maintenance, and use of the same standard hand and power tools of the trade required at the grade 7 level. In addition, they are skilled in using electric drills, acetylene torches, soldering irons and brazing torches, bench lathes and drill presses.

*Responsibility:* At this level, Locksmiths receive assignments from the supervisor either orally or through general work orders indicating location, person to contact for further information, and priorities. Normally the supervisor supervises other trades such as Machinists, Carpenters, Modelmakers, etc., and has little if any technical knowledge of Locksmithing practices and procedures. The nature of assignments requires that work typically be performed on-site, necessitating the Locksmiths to use sound judgment in independently selecting work processes, techniques, and tools and equipment; determining work sequence and type and extent of necessary repairs. They are responsible for planning, setting up, and maintaining master key systems and assuring that no interchanges occur. They may also be responsible for providing technical assistance to lower graded workers and for coordinating their work with others. Due to the nature of assignments and the supervisor's limited technical knowledges, completed work is not reviewed for adherence to accepted trade practices but rather for effectiveness of meeting schedules and customer needs.

*Physical Effort:* In addition to the physical effort described at the grade 7 level, grade 8 Locksmiths may be required to lift security containers weighing up to 50 pounds and heavier weights with assistance.

*Working Conditions:* In addition to the working conditions described at the grade 7 level, grade 8 Locksmiths are exposed to the possibility of burns while using acetylene torches, brazing torches, and soldering irons.

## JOB GRADING SYSTEM

5311-9

Locksmith, Grade 9

5311-9

*General:* In comparison with grade 8 Locksmiths who service a wide variety of commonly used locking devices applying established practices and procedures, grade 9 Locksmiths modify and rework locking devices to accomplish special security objectives. These devices are usually designed to work in conjunction with other components and equipment to form a complete security or surveillance system. In addition, grade 9 Locksmiths are usually considered experts in the area of locking device capabilities and functions and work closely with management in determining the most suitable locks to be used in solving security problems.

In addition to performing the full range of maintenance functions described at the 8 level, grade 9 Locksmiths improvise trade techniques to adapt locking mechanisms for uses to which they were not specifically designed or to hamper or prevent the use of standard neutralization techniques. They apply sound judgment in selecting, reworking or finishing substitute parts, and experimenting with materials and techniques. They are skilled in determining if locking devices have been tampered with and in working with drawings or specifications that are often vague or incomplete, which frequently requires the development of sketches, drawings, or diagrams with sufficient detail to identify missing tolerances, dimensions, and critical parts or surfaces.

Grade 9 Locksmiths make independent judgments in determining the work sequence, selection and use of trade tools and the techniques applied. They may be required to provide technical assistance and guidance to lower level workers at remote customer locations.

*Skill and Knowledge:* Locksmiths at this level apply a thorough knowledge of the full range of locking devices and their parts in order to select substitute parts which would be suitable for use in fabricating locking devices to meet special security objectives. They experiment with various types of materials such as metals, alloys, and plastics when developing parts and components. They are able to select appropriate materials considering such factors as needed strength and hardness, machining characteristics, environmental factors, and the extent to which the materials used could complicate or hamper the use of standard neutralization techniques. In comparison, grade 8 Locksmiths service a wide variety of commonly used locks, and the

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ions they perform involve repairing, <sup>and</sup> replacing or fabricating  
covered by manufacturer parts catalogs and specifications.

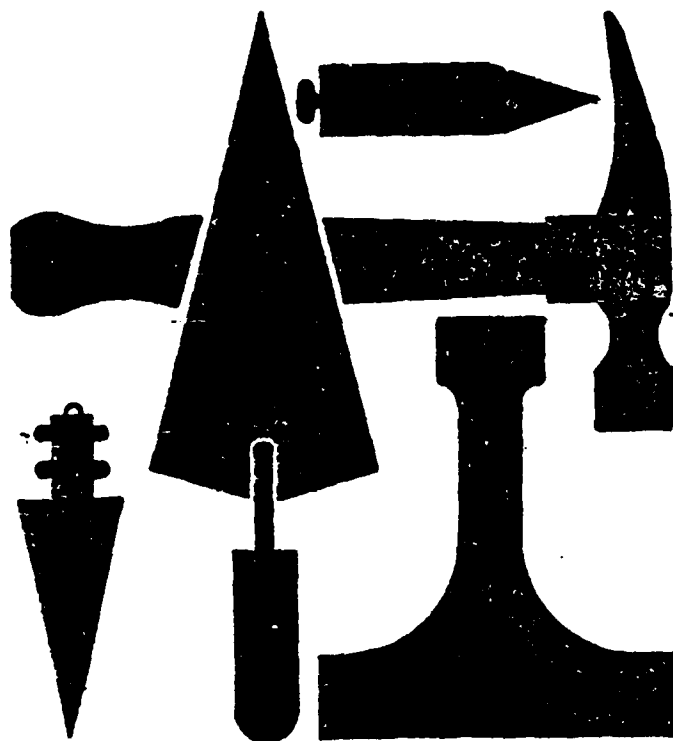
In addition to the skills and knowledges described above, grade 9  
smiths apply a broad knowledge of the functions and capabilities  
commercially manufactured locking devices, as well as their work-  
interrelationships with a variety of equipment such as monitors,  
ms, timing mechanisms, sensors, and other related items which  
e up a complete security or surveillance system in order to provide  
agement with recommendations regarding the most suitable locks  
used in solving specific security problems. In comparison, grade 8  
smiths need only apply a knowledge of the internal structure  
operating characteristics of locking devices in order to trouble-  
n and repair them. Locksmiths at this level also apply a more  
epth knowledge of neutralization techniques than grade 8 Lock-  
ths when conducting investigations to determine if locking devices  
e been tampered with. For example, they carefully disassemble  
locks while closely inspecting them for tool marks, abrasions, and  
aligned parts which would indicate the possibility of an attempted  
"ak-in." In addition they are more skilled in improvising and  
lying neutralization techniques which do not damage the locking  
ices and security containers or doors during lockout situations.

At this level, the Locksmiths perform the full installation and repair  
le on commercially manufactured locking devices, as well as par-  
pate<sup>in</sup> reworking of locks to improve or provide new structural  
functional capabilities. The Locksmiths are skilled in developing  
wings or diagrams which identify necessary dimensions and special  
ts or surfaces to be used in the manufacture and installation proc-  
s. In comparison, grade 8 Locksmiths have available appropriate  
elines, manufacturer drawings, diagrams and technical manuals.  
grade 9 Locksmiths are skilled in reworking and finishing sub-  
ute parts and fabricating parts to close fits. They coordinate their  
rk with personnel in other shops or trades, i.e., machinists in identi-  
ng tolerances and machining irregularly shaped parts. They as-  
ble, test and evaluate the complete locking devices considering the  
ired objectives.

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September 1978

**JOB GRADING STANDARD FOR**

# **MASON WG-3603**



**U.S. CIVIL SERVICE COMMISSION  
BUREAU OF POLICIES AND STANDARDS  
TS-9 NOVEMBER 1969  
FPM SUPPLEMENT 512-1**



WG-3603

MASON

WG-3603

COVERAGE OF STANDARD

This standard is used to grade all nonsupervisory jobs involved in maintenance, repair, alteration, and construction of masonry structures of brick, block, stone, firebrick, and similar materials.

JOBS NOT COVERED BY THIS STANDARD

Jobs that are primarily responsible for the installation and repair of various types of wall, ceiling, and floor covering including ceramic tile.

TITLES

Jobs covered by this standard at and above the WG-10 level are to be titled *Mason*.

Jobs covered by this standard below the WG-10 level are to be titled *Masonry Worker*.

GRADE LEVELS

This standard does not describe all possible levels at which jobs might be established. If jobs differ substantially from the skill, knowledge, and other work requirements described in the grade levels of the standard, they may warrant grading either above or below those grades.

HELPER AND INTERMEDIATE JOBS

Helper and intermediate mason jobs are graded by the U.S. Civil Service Commission job grading standards for Trades Helper and Intermediate Jobs. (WG-10 in this standard is to be used as the "journeyman grade" in applying the Intermediate Job Grading Table.)

The WG-8 level in this standard does not cover jobs that are part of a planned program of training and development of skills for advancement to a higher grade.

(TS-9)  
November 1969

U.S. CIVIL SERVICE COMMISSION

3603-8

Masonry Worker, WG-8

WG-3603-8

The work at this grade involves the maintenance, repair or construction of a variety of structures and surfaces of brick, block, stone, and other related materials. The WG-8 Masonry Worker receives work orders or oral instructions outlining the work to be done and methods to be used in accomplishing the laying of whole brick, block, and stone in straight, horizontal rows. He repairs damaged portions of walls, partitions, or other similar structures in preparation for repair of damage. He tears out portions of walls for the installation of doors or windows.

**Skills and Knowledge:** At this level, the masonry worker must have basic knowledge of the techniques and procedures involved in laying a variety of brick, block, and stone in the construction or repair of such items as partitions, walls, walkways, and fireplaces. He works with whole brick or block requiring the skill necessary to accurately line up courses that are horizontally and vertically straight. He must have the ability to spread mortar to obtain even distribution and thickness between courses. In completing repairs, he must have the skill necessary to spread mortar, set brick and block, and finish mortar joints so that the repaired portion matches the undamaged portion of the structure.

WG-8 Masonry Worker must be skilled in use of the trowel in spreading mortar and finishing joints and in the use of gauge line, spirit level, and plumb bob in obtaining straight courses. He also uses airhammers, hand hammers, chisels, and crowbars to remove sections of walls and in preparing damaged areas for repair. In mixing mortar, he must insure that the proper proportions of sand, lime, cement, and water are used to obtain desired consistency.

When working with stone in constructing or repairing walls, walkways, patios, and foundations, he must be able to properly prepare the surface and place stone in proper position to insure an even surface.

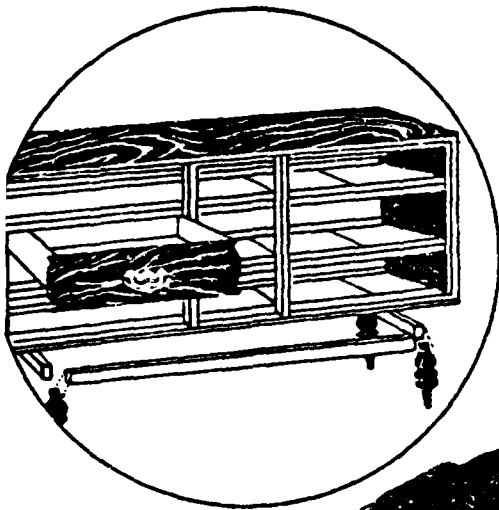
**Responsibility:** A higher grade worker or supervisor assigns work directly or through written work orders. The WG-8 Masonry Worker obtains the proper tools and uses materials called for by instructions. When working as a member of a crew, he receives the necessary instruction from a higher grade worker who is available for

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November 1969



**JOB GRADING STANDARD FOR**  
**WOOD CRAFTSMAN**  
**WG-4605**



**U.S. CIVIL SERVICE COMMISSION**  
**BUREAU OF POLICIES AND STANDARDS**

**TS-15      JANUARY 1971**  
**FPM SUPPLEMENT 512-1**



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## JOB GRADING SYSTEM

WG-3606-9

WG-3606-9

opping material, and in sealing joints of roofing accessories with asphalt. In addition to work at the WG-7 level, the WG-9 Roofer must be able to install and repair the metal roofing accessories themselves, such as gravel guards, flashings, gutters, valleys, vents, pipes, and chimneys.

He also must have the ability to cut and form metal accessories to meet roofing requirements, to fasten them to roof with nails or screws, to solder metal joints, and to cut and shape shingles to fit around the accessories.

In comparison with the WG-7 level, the WG-9 Roofer also must be familiar with a greater variety of roofing materials and their uses and methods of installation. He must know how to apply wood, asbestos, slate tile, and composition shingles; metal roofing panels; roofing felt and asphalt. When required, he must be able to apply asbestos siding materials.

In addition to the handtools used at the WG-7 level, he must be skilled in the use of shingle cutters, metal snips, and saws.

*Responsibility:* The WG-9 Roofer receives work assignments from a supervisor, either orally or in the form of work orders or maintenance complaints. In comparison with the detailed work instructions received at the WG-7 level, the WG-9 Roofer has greater responsibility in determining, planning, and laying out the work to be done from sketches and blueprints; deciding the extent of repairs needed, such as replacement of decking or beams; locating and eliminating leaks; installing new roofs; and insuring a waterproofing surface. He is responsible for accomplishing the complete job in accordance with standard trade practices.

His supervisor spot-checks work upon completion to insure that it meets trade standards.

*Physical Effort:* The physical effort is similar to that described at the WG-7 level.

*Working Conditions:* The working conditions are similar to those described at the WG-7 level.

U.S. CIVIL SERVICE COMMISSION

WG-3606-9

Roofer, WG-9

WG-3606-9

**General:** The work at this grade, in addition to work done at the WG-7 level, involves determining the roofing work to be done, locating leaks and determining their cause and extent of damage, selecting the work method to be followed for repair and determining and using a greater variety of roofing materials and accessories such as shingles, roofing felt, and asphalt. The WG-9 Roofer installs new roofs, including metal flashing, gutters, and other roofing accessories, and repairs or replaces sheathing, boards, beams, and joists.

The WG-9 Roofer receives work orders, oral instructions, or maintenance complaints, and accomplishes assigned tasks following established work procedures and accepted trade practices.

**Skill and Knowledge:** In comparison with the WG-7 level, the WG-9 Roofer must have a greater knowledge of roofing techniques in applying a greater variety of protective coverings to roof surfaces, including different types of shingles, gravel, and other topping, and asbestos-aluminum compound. He must have the ability to trace leaks, which requires a greater knowledge of roof construction, since leaks may originate some distance from entry through ceiling. In addition to what is required at the WG-7 level, more skill is required by the WG-9 Roofer in locating leaks to pinpoint the leak area, to remove the old roofing to get at the source of the leak, and to eliminate the need for extensive preliminary work. He also must be skilled in repairing leaks after insuring that the damaged area is properly dried out and adequately prepared for repair. He must be able to match original roofing material with material used to complete repairs.

He must be able to open roofs and install skylights, pipes, and ventilators where the primary consideration is waterproofing. In repairing leaks, he determines when roof decking, beams, or joists are to be replaced. If so, he must have the ability to complete the replacement or repair.

The WG-9 Roofer must be fully skilled in installing new roofs. He must have the ability to apply starter row of shingles to insure that they overlap properly and that they are securely fastened to the subsurface to eliminate possibility of leaks. On built-up roofs, he must be skilled in applying roofing felt, asphalt and gravel, or other

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January 1970

## JOB GRADING SYSTEM

WG-3606-7

WG-3606-7

*Working Conditions:* The WG-7 Roofer works outside in all kinds of weather. He is subject to danger of falling when working on roofs and from scaffolds and ladders. He is exposed to possibility of burns from hot asphalt, as well as cuts and bruises. Working with asphalt results in exposure to unusually dirty conditions that are damaging to clothing and shoes.

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WG-3606-7

Roofer, WG-7

WG-3606-7

**General:** The WG-7 Roofer removes old roofing in preparation for repair, assists in repairing and installing roofs, and operates asphalt kettle. He receives detailed instructions, either orally or in the form of work orders, which outline the work to be done and the materials and methods to be used in accomplishing the job.

**Skill and Knowledge:** At this level, the roofer must have a knowledge of the methods and procedures involved in the installation of new roofs and the repair of leaky roofs. He must be skilled in removal of defective roofing to preclude damage to subsurfaces and to insure that area is properly prepared for new roofing. When installing shingles and tiles, he must be able to lay material in straight lines to insure proper overlap and coverage. On built-up roofs he must be skilled in applying roofing felt and asphalt to obtain proper overlap and to eliminate the possibility of leaks. He must be able to apply asphalt around flashings and gravel guards to obtain proper seal.

The WG-7 Roofer must have the ability to operate the asphalt kettle, heating solidified asphalt to the proper working temperature. He must be able to use prybars, hammers, nailpullers, and other tools to remove old roofing. He also must be able to use equipment such as roofing mop and rake to spread asphalt and topping material. He must have the ability to rig a hoist for raising asphalt and roofing materials to roof level.

**Responsibility:** The WG-7 Roofer receives work assignments orally or through written work orders from a higher grade worker or supervisor. He receives detailed instructions as to work to be performed and methods and materials to be used. Normally, he works as a member of a crew where a higher grade worker is available for assistance and guidance. His work is checked during progress and upon completion for adequacy and to make sure that it meets standard trade practices.

**Physical Effort:** The WG-7 Roofer is frequently required to perform heavy lifting up to 100 pounds while carrying rolls of roofing felt, shingles, and asphalt. He is continually walking and standing and frequently climbs ladders and scaffolds.

## COVERAGE OF STANDARD

This standard is used to grade all nonsupervisory jobs involved in maintenance, installation, repair, and weatherproofing of roofs.

## TITLES

Jobs covered by this standard are to be titled *Roofer*.

## GRADE LEVELS

This standard does not describe all possible levels at which jobs might be established. If jobs differ substantially from the skill, knowledge, and other work requirements described in the grade levels of the standard, they may warrant grading either above or below those grades.

## HELPER AND INTERMEDIATE JOBS

Jobs that are part of a planned program of training and development for advancement to a higher grade are graded by the U.S. Civil Service Commission Job Grading Standards for Trades Helper Jobs and Intermediate Jobs. (WG-9 in this standard is to be used as the "journeyman grade" in applying the Intermediate Job Grading Table.)

The WG-7 level in this standard does not cover jobs that are part of a planned program of training and development of skills for advancement to a higher grade.

**JOB GRADING STANDARD FOR**  
**ROOFER WG-3606**



**U.S. CIVIL SERVICE COMMISSION**  
**BUREAU OF POLICIES AND STANDARDS**

**TS-10 JANUARY 1970**  
**FPM SUPPLEMENT 512-1**



## JOB GRADING SYSTEM

WG-3605-9

WG-3605-9

The plasterer must be familiar with the properties of and be able to mix all types of plastering materials such as base coat gypsum, lime plaster, concrete bonding plaster, and finishing plaster. When required to mix colored stucco, he must be able to blend coloring matter and aggregate to obtain desired color.

He must have the ability to install or replace metal, wood, or gypsum lath. He must have the knowledge to determine types of lath to be used, depending on thickness and type of plaster and other requirements of the job. In repairing damaged areas, he must be able to decide when lath must be replaced. He must be skilled in applying tape to joints between wallboards to assure an even surface.

**Responsibility:** The plasterer receives assignments from the supervisor either orally or through work orders. He reviews work to be completed, interprets sketches and decides work methods or processes best suited to complete the job. He selects tools and materials and completes assignments with little or no review during progress. Upon completion of the job, his supervisor may check to insure adequacy and appearance. In repairing damaged area, he is responsible for determining how much old plaster to remove to obtain a firm surface and whether to replace lath. He is responsible for insuring that proper plastering materials are used to fit the job requirements and that plaster and stucco are properly mixed.

**Physical Effort:** The work requires continual standing, walking, climbing, and bending. Occasionally, he is required to do heavy lifting of up to 100 pounds while carrying mortar, scaffolds, ladders, and other materials.

**Working Conditions:** The plasterer is frequently exposed to dust and dirt while mixing mortar and accomplishing plastering tasks. He may be required to work outdoors on occasion. Since it is necessary that he work from ladders and scaffolds, he is subject to danger of falling.

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**U.S. CIVIL SERVICE COMMISSION**

**WG-3605-9**

**Plasterer, WG-9**

**WG-3605-9**

**General:** The work at this grade involves the mixing, application, and finishing of plaster surfaces in the construction and repair of interior walls and ceilings and stucco exterior walls. The WG-9 Plasterer performs new plastering on all types of backgrounds such as metal, wood or gypsum lath, wallboard, and masonry surfaces, as well as repair and patching of plaster and stucco surfaces.

The WG-9 Plasterer works from oral instructions, blueprints, work orders, and rough sketches. He plans and lays out work to be accomplished, selects the proper tools and material, and accomplishes the job in accordance with accepted trade practices.

**Skill and Knowledge:** The plasterer must have a thorough knowledge of plastering trade practices and must be skilled in applying work methods and techniques.

He must have skill in applying the base or scratch coat to insure that it adheres firmly to lath or other subsurfaces. He must have the knowledge to determine when the base coat and second or brown coat is properly set and scored before additional coats can be applied. He must have the ability to complete finishing work to obtain a smooth surface and to obtain proper texture.

The plasterer must be skilled in performing a variety of exacting plaster work such as running baseboards, moldings, cornices, and applying special finishes. He must have the ability to construct molded plaster cornices, plaster panels, and trim and attach to walls. In addition, he must be able to perform angular, rounded, and overhead plastering.

In accomplishing repairing or patching, he must know how to prepare damaged areas to insure that the new plaster will adhere to surface and surrounding plaster. He must have the ability to apply new plaster and finish in such a manner that it blends with the adjoining area.

He must have skill in the use of tools common to the plastering trade such as angle trowels to smooth angles and corners, trowel and float to draw up surface and provide a smooth finish, as well as screeds, daby, plasterer's hawk and straight edges. He must be skilled in the use of brushes, sponges, and other materials to obtain the proper texture.

WG-3605

**PLASTERER**

WG-3605

**COVERAGE OF STANDARD**

This standard is used to grade all nonsupervisory jobs involved in the application and finishing of plaster surfaces in the construction and repair of interior walls and ceilings and stucco exterior walls.

**TITLES**

Jobs covered by this standard are to the titled *Plasterer*.

**GRADE LEVELS**

This standard does not describe all possible levels at which jobs might be established. If jobs differ substantially from the skill, knowledge, and other work requirements described in the grade level of the standard, they may warrant grading either above or below that grade.

**HELPER AND INTERMEDIATE JOBS**

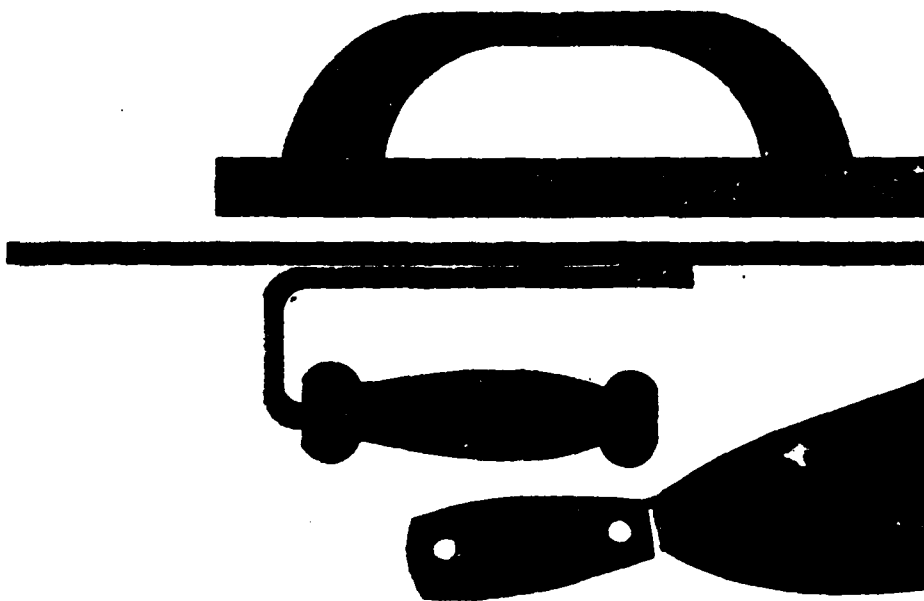
Helper and intermediate plasterer jobs are graded by the U.S. Civil Service Commission job grading standards for Trades Helper and Intermediate Jobs. (WG-9 in this standard is to be used as the "journeyman grade" in applying the Intermediate Job Grading Table.)

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**JOB GRADING STANDARD FOR**

# **PLASTERER WG-3605**



**U.S. CIVIL SERVICE COMMISSION  
BUREAU OF POLICIES AND STANDARDS  
TS-9 NOVEMBER 1969  
FPM SUPPLEMENT 512-1**



## JOB GRADING SYSTEM

WG-3603-10

WG-3603-10

In repairing and rebuilding furnace walls and relining boilers, he must have skill in laying firebrick and insulating brick, requiring the use of fire resistant mortar and fire clay. In constructing circular smokestacks or chimneys, he must have the ability to insure that the proper taper is obtained.

In addition to tools shown at the next lower level, he must be able to use a variety of hand and power tools such as brick or napping hammer, brick or skill saw in cutting and shaping brick and axe, pick, chisel, and hammer in cutting or shaping stone.

**Responsibility:** At this level, the mason receives assignments from supervisors either orally or through work orders. He reviews work to be performed, interprets blueprints or sketches, and decides work methods or processes best suited to complete the work. He performs his tasks independently, with little or no work direction. The finished work may be spot-checked for adequacy and adherence to accepted trade practices. In decorative work, he receives assignments as to end result desired and proceeds independently in outlining patterns and designs, determining methods and procedures, computing materials, and accomplishing assigned tasks.

**Physical Effort:** The physical effort is similar to that described at the WG-8 level.

**Working Conditions:** The working conditions are similar to those described at the WG-8 level.

U.S. CIVIL SERVICE COMMISSION

WG-3603-10

Mason, WG-10

WG-3603-10

**General:** The work at this grade involves the maintenance, repair, alteration, and construction of exterior and interior surfaces and structures built of a variety of brick, block, and stone. The WG-10 Mason works from oral instructions, blueprints, work orders, and rough sketches. He plans and lays out the work to be done, selects the proper tools, determines materials to be used, and accomplishes the work in accordance with appropriate methods and accepted trade practices. He lays common and face brick, firebrick, cinder and cement block, glass block, terra cotta, and various artificial and natural stone in constructing and repairing such items as walls, walks, chimneys, fireplaces, manholes, boilers, and catch basins.

In comparison to the WG-8 Masonry Worker, the WG-10 Mason must have a broader knowledge of the masonry trade in planning work and determining methods and techniques to be used. He must have greater skill in cutting and shaping brick, block, and stone in constructing and repairing window and door openings, and corners. In addition to laying whole brick in straight, horizontal rows, he must be able to perform a variety of more complex brickwork such as circular smokestacks.

**Skill and Knowledge:** At this level, the mason must have a comprehensive knowledge of the techniques and procedures of brick, block, and stonework. In addition to laying whole brick and block, he must have the skill necessary to cut and shape brick to complete corners. He must have the knowledge necessary to enable him to construct windowsills, lintels, and arches capable of supporting the walls above the openings. In sealing off windows and doors, he must insure that courses are laid evenly and that completed work blends with existing brickwork. He must have the skill to perform decorative brickwork through placement of brick of different colors to create various designs and patterns. He must be able to use other techniques to obtain desired decorative results, such as fastening brick or terra cotta veneer to face of structure using tie wire or anchor holes.

In addition to the stonework shown at the next lower level, the WG-10 Mason must be able to cut, shape, and finish stone. He lays rubble or cut stone in the repair or construction of walls, patios, and walkways, requiring that stone be sorted by size and shape and that it be laid to obtain strength and appearance.

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## JOB GRADING SYSTEM

WG-3603-8

WG-3603-8

guidance and assistance. His work is checked during progress and upon completion for accuracy and to insure that it meets standard trade practices.

*Physical Effort:* The WG-8 Masonry Worker is frequently required to perform heavy lifting up to 90 pounds in carrying bricks, block, stone, mortar, cement, and sand. He is continually required to stand while working and must frequently climb ladders and scaffolds.

*Working Conditions:* The WG-8 Masonry Worker is exposed to a variety of weather conditions while outdoors. He is subject to danger of falling when working from ladders and scaffolds. He is also exposed to dust and dirt while mixing mortar and while handling various masonry materials.

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## WORK COVERED

This standard covers nonsupervisory work which involves making and repairing high-grade wooden items such as fine cabinetry and furniture. The work involves shaping and contouring surfaces; precise, intricate joining and decorating; skilled use of the full range of woodworking tools, machines, and techniques; and application of extensive knowledge of the appearance, durability, strength, and machining characteristics of a wide range of wood and wood substitutes.

## WORK NOT COVERED

The following kinds of work are not covered by this standard:

- Constructing, altering, and repairing buildings and other structures including, for example, constructing and repairing frames, floors, walls, and shelves, and installing windows, doors, and completed or readymade cabinetry;
- Constructing, altering, or repairing furniture which does not require shaping and contouring surfaces, intricate joining and decorating (such as inlays, scrollwork, and friezes), and extensive knowledge of a wide range of wood and wood substitutes;
- Sanding, finishing or painting, or upholstering furniture;
- Operating one or several woodworking machines on a production basis to make items of limited variety and complexity;
- Making and repairing boxes and crates;
- Constructing and repairing wharves and staging;
- Making wooden production patterns for manufacturing metal or plastic items of complex design;
- Planning and laying out drydock cradles; and
- Assembling, repairing, or molding metal and plastic items.

## TITLES

Jobs graded by this standard are to be titled *Wood Craftsman*.

U.S. CIVIL SERVICE COMMISSION

WG-4605

GRADE LEVELS

WG-4605

This standard describes only one wood craftsman level. Jobs which differ substantially from the skill, knowledge, and other work requirements in the grade level described in this standard may be graded either above or below this grade. Because progression to the grade described in the standard is most frequently from intermediate wood craftsman jobs, from formal apprentice training programs, or through other Woodworking Family occupations such as carpenter, a lower level has not been described.

HELPER AND INTERMEDIATE JOBS

Helper and intermediate wood craftsman jobs are graded by the U.S. Civil Service Commission job grading standard for Trades Helper and the job grading standard for Intermediate Jobs.



## JOB GRADING SYSTEM

WG-4605-10

Wood Craftsman WG-10

WG-4605-10

*General:* The WG-10 Wood Craftsman makes and repairs high-grade wooden items such as cabinetry, furniture, orthopedic devices, and decorative woodwork for use in homes, offices, planes, boats, ships, and for medical and other uses. These items have intricate, precise and fancy features and details such as curved and contoured surfaces, marquetry, book-matched panels, scrollwork, friezes, inlays, and complex joints. The WG-10 Wood Craftsman plans and lays out his work from specifications, blueprints, sketches, and oral instructions. He selects, cuts, turns, shapes, joins, bonds, fits, assembles, and decorates wooden materials and parts, using the full range of hand and power woodworking tools, machines, and techniques. He takes into consideration the tooling, durability, cost, strength, and appearance characteristics of a variety of softwoods, hardwoods, plywoods, veneers, and wood substitutes when planning and completing his projects.

The craftsman works with little or no guidance after receiving an assignment. A supervisor reviews completed work for compliance with plans and specifications and for timeliness.

*Skill and Knowledge:* The WG-10 Wood Craftsman must have the ability to make a wide variety of wooden items with unique and intricate shapes and designs, and with a number of interlocking parts which must precisely fit and join.

The WG-10 Wood Craftsman must have considerable planning and layout ability. He must be able to interpret and check plans, blueprints, and sketches; visualize the item to be made; compute, check, and insure the consistency of the dimensions of a number of interlocking parts; make templates and patterns; select appropriate machines, tools, and techniques; and plan the sequence of the work. The wood craftsman must have knowledge of and skill in using a wide range of woodworking machining techniques to set up, adapt, and use appropriate machines, tools, and accessories to accomplish projects like those described above. He must be able to do precise, intricate work with power shapers, mortisers, tenoners, jointers, routers, lathes, and various other woodworking tools, accessories, and machines. He must be able to devise fixtures, templates, and jigs to hold or guide items in woodworking machinery. He must be able to use machines to do work for which they may not have been

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U.S. CIVIL SERVICE COMMISSION

WG-4605-10

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specifically designed. He must be able to assemble or make patterns for nonstandard cutter edge shapes.

The craftsman must have skill in developing curved, contoured, and shaped surfaces and features such as inlays, scrollwork, marquetry, carving, miniature parts, friezes, matched panels, matched contours, and complex joints. He must have skill in laminating, veneering, plastic overlaying, steam bending, and grain matching.

The wood craftsman must have extensive knowledge of the various properties and characteristics of a wide variety of hardwoods, softwoods, plywoods, veneers, wood substitutes, glueing and bonding agents, and other woodworking materials.

For example, he must know the appearance characteristics of woods and wood substitutes, including their grain, porosity, luster, tendency to warp, reaction to polishing and finishing. He must know the strength and durability of wood and wood substitutes, including their hardness, elasticity, ability to support weight, and their resistance to weather, water, vapors, and chemicals. He must also know how strength is affected by various machining, bonding, and joining techniques and by defects in the wood. The craftsman must know the machining properties of woods and wood substitutes such as their splitting, chipping, and splintering tendencies; the speed at which different materials and different grades of the same material can be machined and the smoothness that can be expected; and the degree of difficulty involved in machining small or unusual shapes from various materials. Based on his knowledge of woodworking materials, the wood craftsman must have the ability to select or recommend use of materials that will give the items to be made the required strength, durability, fit, match, and high-grade appearance.

**Responsibility:** The WG-10 Wood Craftsman receives assignments through work orders, plans, specifications, sketches, and oral discussions. He lays out his work by interpreting plans and specifications or sketches; devising any needed plans and patterns; selecting appropriate combinations of materials, machines, accessories, processes, and techniques; and planning the complete sequence of work. When certain machines, materials, and equipment are not

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## JOB GRADING SYSTEM

WG-4605-10

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available or will not produce the desired results, he determines which others to use. He consults with his supervisor or the customer when he proposes changes that will affect the item's strength, durability, appearance, or cost.

The WG-10 Wood Craftsman is responsible for minimizing waste and cost when laying out patterns on materials, when selecting and substituting materials, and when planning or changing the sequence of his work to cut time. He advises customers on matters such as errors in their plans or dimensions, problems of fit or installation, and selection or substitution of materials.

The WG-10 Wood Craftsman performs his work with little guidance or review. His supervisor may occasionally observe the work in progress to insure timely accomplishment, and visually checks completed work only for compliance with plans, specifications, and user needs.

*Physical Effort:* The WG-10 Wood Craftsman works in tiring positions for prolonged periods. His work requires frequent standing, bending, stooping, crouching, and arm movement. He sometimes does his work in cramped areas, on temporary platforms, and overhead. The wood craftsman frequently lifts and carries items weighing up to 45 pounds. He may occasionally lift heavier items with assistance.

*Working Conditions:* The wood craftsman usually works in wood-working machine shop areas or other enclosed areas which are sometimes unheated. He is frequently exposed to eye, skin, nose, and lung irritations from glue, bonding chemicals, vapors, splinters, and sawdust. He is also frequently exposed to the possibility of receiving cuts and serious injuries such as loss of fingers, from accidents while operating woodworking machines.

To minimize or eliminate the effects of some of these conditions, the wood craftsman follows numerous safety practices and wears or uses various protective devices.

For example:

- he may wear protective eyeglasses or a face mask to protect against flying wooden particles;

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January 1971

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U.S. CIVIL SERVICE COMMISSION

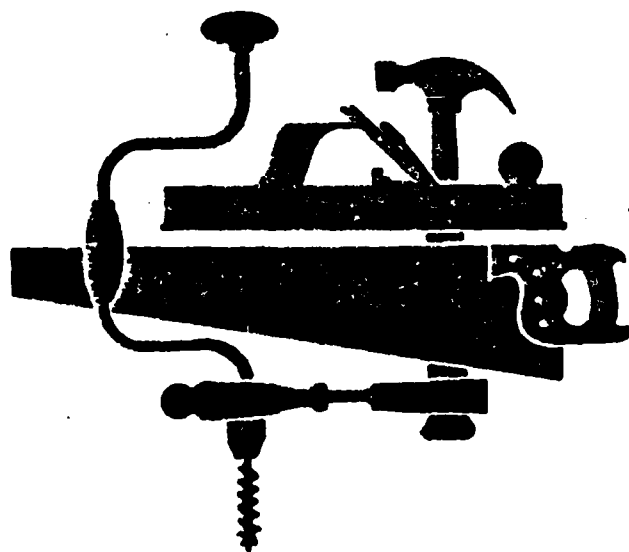
WG-4605-10

WG-4605-10

- he may wear protective ear devices to lower noise;
- he may wear a respirator to protect against sawdust and vapors;
- he uses machine guards to protect against cuts and loss of fingers;
- he follows numerous safety practices in operating machines and using tools and equipment.

Some of the protective devices the wood craftsman uses may be uncomfortable and may be worn for long periods.

**JOB GRADING STANDARD FOR**  
**CARPENTER WG-4607**



**U.S. CIVIL SERVICE COMMISSION**  
TS-5, FEBRUARY 1969  
FPM SUPPLEMENT 512-1



WG-4607

**CARPENTER**

WG-4607

**COVERAGE OF STANDARD**

This standard is used to grade all nonsupervisory jobs involved in constructing, altering, and repairing buildings and structures, fittings, panels, partitions, and other wood or wood substitute articles.

**JOBS NOT COVERED BY THIS STANDARD**

Jobs that involve making, repairing, and assembling boxes, crates, and containers; crating; blocking and bracing; cabinetmaking; and operating woodworking machinery, as a primary assignment, are not covered by this standard.

**TITLES**

Jobs covered by this standard below the WG-9 level are to be titled *Carpentry Worker*.

Jobs covered by this standard at the WG-9 level and above are to be titled *Carpenter*.

**GRADE LEVELS**

This standard does not describe all possible levels at which jobs might be established. If jobs differ substantially from the skill, knowledge, and other work requirements described in the grade levels of the standard, they may warrant grading either above or below those grades.

**HELPER AND INTERMEDIATE JOBS**

Helper and Intermediate carpenter jobs are graded by the U.S. Civil Service Commission Job Grading Standard for Trades Helper and Intermediate Jobs. (WG-9 level in this standard is to be used as the "journeyman grade" in applying the Intermediate Job Grading Table.)

The WG-7 level in this standard does not cover jobs that are a part of a planned program of training and development of skills for advancement to a higher grade.

(TS-5)  
February 1969

U.S. CIVIL SERVICE COMMISSION

WG-4607-7

Carpentry Worker, WG-7

WG-4607-7

**General:** Carpentry work at this grade involves measuring, cutting, and constructing or repairing wood or wood substitute items such as scaffolds, staging parts, panels, bins, pallets, concrete forms, dry walls, sheathing, and roof decking where required fit and accuracy provide a serviceable product and when appearance is not essential.

The WG-7 carpentry worker applies standard measurements and specifications aided by clear and specific instructions, templates, precut or preplanned materials.

**Skill and Knowledge:** At this grade, the carpentry worker must know how to add, subtract, multiply, divide, and work with simple fractions to plan and measure material according to requirements and dimensions outlined in instructions. He must have the skill to use tapes, rules, and squares accurately and to use shop tools such as hammers, handsaws, planes, screwdrivers, powersaws, and powerplaners.

**Responsibility:** A higher grade worker or a supervisor assigns work orally or through work orders with sketches or easily understood blueprints. The WG-7 carpentry worker selects tools, decides on the methods and techniques to use, and carries out assignments which are spot-checked during their progress. He selects the materials which are described in the specifications or gets permission to substitute if standard material is not available. The higher grade worker or supervisor also checks fits and measurements to see that the completed work meets requirements.

**Physical Effort:** The WG-7 carpentry worker usually works at benches or while material is on supports. This requires considerable standing, stooping, and bending. He also works on ladders and scaffolds which require him to work overhead or in stretched, cramped, or awkward positions. Arm movement is considerable when nailing and using such tools as handsaws and planers. The carpentry worker occasionally may lift and carry items that weigh about 50 pounds.

**Working Conditions:** Some work at this grade is done inside a shop where the worker is subject to cuts from hand or powered tools and danger from flying splinters and chips. Shop work is also unpleasant due to the presence of sawdust in the air. Frequently, the carpentry worker at this grade works outside in all kinds of weather. There are times when protection from weather conditions is limited to unheated building shells. He also works on scaffolding and high ladders or rooftops when nailing and installing completed items.

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## JOB GRADING SYSTEM

WG-4607-9

Carpenter, WG-9

WG-4607-9

**General:** The work at this grade involves construction, alteration, repair, or modification of items and structures such as framework, rafters, doors, finished paneling, windows, rough furniture, airplane sections, interior and exterior trim, staircases, trusses and beams, where accuracy, spacing, and fit are essential and structural soundness or appearance are important. The WG-9 carpenter plans and completes projects from initial layout to final assembly or installation.

In comparison with WG-7 carpentry worker, planning and layout work is more difficult at this level because instructions are frequently less specific. This requires the WG-9 carpenter to measure more accurately and to fill in gaps on incomplete blueprints, sketches, and work orders. The WG-9 carpenter is also concerned with items which are more difficult to construct since straight, angle, and curved cuts must be exact. Assembly and installation are more difficult at this grade because the finished items are usually closely joined to other assemblies to strengthen and support or to provide air- and weathertight assemblies. Repairs and modifications are complicated by the requirement to know the size, shape, and purpose of the complete structure in order to measure, cut, and fit the specific item concerned.

**Skill and Knowledge:** At this grade, the carpenter needs a knowledge of and skill in using any of the accepted trade methods and techniques. In addition to a knowledge of simple arithmetic, described at the WG-7 level, the WG-9 carpenter must know more advanced shop mathematics to plan and compute more complex and exact projects with features such as arcs, tangents, and circles. He must know how to set up, adjust, and adapt hand and power tools to accomplish more difficult tasks such as cutting bevels, rabbets, chamfers, dados, grooves, and miter joints; laminating and bending; and fine-surfacing of materials. He must also be able to sharpen saws and saw blades, tools, and accessories. The WG-9 carpenter must have the ability to read, interpret, and apply building plans, specifications, blueprints, sketches, and building codes which are more complicated than the sketches or easily understood blueprints used by the WG-7 carpentry worker.

**Responsibility:** The supervisor assigns work orally or through work orders which are less detailed at this level than at the WG-7 level where dimensions and requirements are usually complete and

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easily understood. The WG-9 carpenter determines the kind and type of materials and tools which will be needed to complete the assignment similar to the WG-7 worker, but he makes his selection from a wider variety of materials and equipment and substitutes on his own initiative. Fitting and installing require close attention to specifications, blueprints, and sketches without assistance or supervision, except on the most complicated projects, while the WG-7 worker is closely checked on work requiring close tolerances. The supervisor checks the completed work of the WG-9 carpenter only to insure that the finished project meets accepted trade standards, while the WG-7 worker has his finished work closely checked for proper dimension, size, and shape.

*Physical Effort and Working Conditions:* The WG-9 carpenter uses essentially the same physical effort and works in the same conditions described at the WG-7 level.

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JOB GRADING STANDARD FOR

# MAINTENANCE MECHANIC

## WG-4749



U.S. CIVIL SERVICE COMMISSION  
BUREAU OF POLICIES AND STANDARDS

TS-30 May 1974  
FPM SUPPLEMENT 512.1



**WORK COVERED**

This standard is used to grade nonsupervisory work involved in the maintenance and repair of grounds, exterior structures, buildings, and related fixtures and utilities, requiring the use of a variety of trade practices associated with occupations such as carpentry, masonry, plumbing, electrical, air conditioning, cement work, painting, and other related trades.

**WORK NOT COVERED**

The following kinds of work are not covered by this standard:

- Work requiring mainly physical abilities and effort involving no knowledge of trade practices. (See Job Grading Standard for Laborer, WG-3502.)
- Assisting journeyman workers in one or more of the skilled trade occupations. (See Job Grading Standard for Trades Helper.)
- Semiskilled work performed to increase knowledge of a trade and to develop skills for advancing to the journeyman level. (See the Intermediate Job Grading Standard.)
- Maintenance work requiring skill, knowledge, and experience predominately in a single trade. (See, for example, Job Grading Standards for Carpenter, WG-4607, Plumber, WG-4206, and Electrician, WG-2805.)

**TITLES**

Jobs graded by this standard at the WG-8 level and below are to be titled *Maintenance Worker*.

Jobs graded by this standard at the WG-9 level and above are to be titled *Maintenance Mechanic*.

**GRADES**

This standard does not describe all possible grades at which jobs might be established. If jobs differ substantially from the skill, knowledge, or other work requirements described for the grade levels of the jobs in the standard, they may warrant grading ei-

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above or below the grades of these jobs, based on sound job grading methods.

NOTES TO USERS

Work in this occupation varies in the combination of trade practices that are performed in the many different work situations throughout the Federal service. Despite the variety of combinations, two main elements of the occupations are constant. The work requires the application of more than one trade practice and the highest level of work is performed in at least two of the trades involved. Jobs that meet these two criteria and the definition in the WORK COVERED paragraph are considered to be in this occupation.

Grade level distinctions are provided in this standard to show how jobs in this occupation are graded. It is not necessary to describe the work narratively because most of the different kinds of work are already described in other job grading standards.

The examples of work that are presented at the various grade levels are not intended to show typical combinations of work. Duty assignments in this occupation may vary based on the work environment and also the skills and abilities of the employees. The examples are intended to show some of the more common combinations of work. They are presented to clearly demonstrate the technique to be used in grading other jobs in maintenance activities that do not meet the criteria. They demonstrate that jobs in an occupation that combine duties of otherwise discrete trades are graded the same way as jobs that are not identified with a single occupation, but consist of work in separate occupations. (e.g., Warehouseman Forklift Operator.)

If the highest level of work represents a single occupation (e.g., carpenter), the job should be titled and graded according to the job grading standard for the single occupation that represents the highest skill and qualification requirements of the predominant line of work.

The physical effort and working conditions may affect the grade of the job only if they differ significantly from these factors as they are described in the applicable job grading standards.

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# JOB GRADING SYSTEM

WG-4749-7

Maintenance Worker, WG-7

WG-4749-7

*General:* The WG-7 Maintenance Worker performs a variety of tasks involved in the upkeep of buildings, grounds, and related structures, fixtures and utilities. Typical work assignments include the performance of visual examinations and operational tests to determine the need for, and the performance of, repair work on a level of difficulty and responsibility of trades such as those described in job grading standards for the kinds and levels of work shown in the following examples. (Examples of similar jobs that are assigned to other occupations are also shown.)

Mixed Work Examples		Title, Code, and Grade	
Carpentry	WG-4607-7	Maintenance Worker	WG-4749-7
Plumbing	WG-4206-7		
Painting	WG-4102-7		
Roofer	WG-3606-7	Maintenance Worker	WG-4749-7
Asphalt Worker	WG-3653-7		
Painting Worker	WG-4102-7		
Asphalt Worker	WG-3653-5	Maintenance Worker	WG-4749-7
Roofer	WG-3606-7		
Carpentry Worker	WG-4607-7		
Roofer	WG-3606-7	Roofer	WG-3606-7
Asphalt Worker	WG-3653-5		
Gardener	WG-5003-6		
Plumbing Worker	WG-4206-7	Plumbing Worker	WG-4206-7
Asphalt Worker	WG-3653-5		
Cement Worker	WG-3602-6		

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WG-4749-8

Maintenance Worker, WG-8

WG-4749-8

*General:* The WG-8 Maintenance Worker performs a variety of tasks involved in the upkeep of buildings, grounds, and related structures, fixtures, and utilities. Typical work assignments include the performance of visual examinations and operational tests to determine the need for, and the performance of, repair work on a level of difficulty and responsibility of trades such as those described in job grading standards for the kinds and levels of work shown in the following examples. (Examples of similar jobs that are assigned to other occupations are also shown.)

Mixed Work Examples		Title, Code, and Grade	
Electrical Worker	WG-2805-8	Maintenance Worker	WG-4749-8
A/C Equipment			
Mechanic	WG-5306-8		
Carpentry Worker	WG-4607-7		
Sheet Metal Worker	WG-3806-8	Maintenance Worker	WG-4749-8
A/C Equipment			
Mechanic	WG-5306-8		
Heating Equipment Mechanic	WG-5309-8		
Cement Finisher	WG-3602-8	Maintenance Worker	WG-4749-8
Masonry Worker	WG-3603-8		
Pest Controller	WG-5026-6		
Electrical Worker	WG-2805-8	Electrical Worker	WG-2805-8
Carpentry Worker	WG-4607-7		
Plumbing Worker	WG-4206-7		

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# JOB GRADING SYSTEM

WG-4749-9

Maintenance Mechanic, WG-9

WG-4749-9

*General:* The WG-9 Maintenance Mechanic performs a variety of tasks involved in the upkeep of buildings, grounds and related structures, fixtures, and utilities. Typical work assignments include the visual examinations and operational tests to determine the need for, and the performance of, repair work on a level of difficulty and responsibility of trades such as those described in job grading standards for the kinds and levels of work shown in the following examples. (Examples of similar jobs that are assigned to other occupations are also shown.)

Mixed Work Examples		Title, Code, and Grade	
Painter	WG-4102-9	Maintenance Mechanic	WG-4749-9
Plumber	WG-4206-9		
Carpenter	WG-4607-9		
Asphalt Worker	WG-3653-7	Maintenance Mechanic	WG-4749-9
Roofer	WG-3606-9		
Carpenter	WG-4607-9		
Roofer	WG-3606-9	Roofer	WG-3606-9
Asphalt Worker	WG-3653-7		
Cement Finisher	WG-3602-8		
Painter	WG-4102-9	Painter	WG-4102-9
Carpentry Worker	WG-4607-7		

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**WG-4749-10**

**Maintenance Mechanic, WG-10**

**WG-4749-10**

**General:** The WG-10 Maintenance Mechanic performs a variety of tasks involved in the upkeep of buildings, grounds, and related structures, fixtures, and utilities. Typical work assignments include the performance of visual examinations and operational tests to determine the need for, and the performance of, repair work on a level of difficulty and responsibility of trades such as those described in job grading standards for the kinds and levels of work shown in the following examples. (Examples of similar jobs that are assigned to other occupations are also shown.)

<b>Mixed Work Examples</b>		<b>Title, Code, and Grade</b>
Electrician	WG-2805-10	Maintenance Mechanic    WG-4749-10
A/C Equipment Mechanic	WG-5306-10	
Sheet Metal Mechanic	WG-3806-10	Maintenance Mechanic    WG-4749-10
Boiler Plant Equipment Mechanic	WG-5309-10	
Electrician	WG-2805-10	Maintenance Mechanic    WG-4749-10
Mason	WG-3603-10	
Electrician	WG-2805-10	Electrician    WG-2805-10
Roofer	WG-3606-9	
Carpenter	WG-4607-9	
Boiler Plant Equipment Mechanic	WG-5309-10	Boiler Plant Equipment Mechanic    WG-5309-10
Electrical Worker	WG-2805-8	



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